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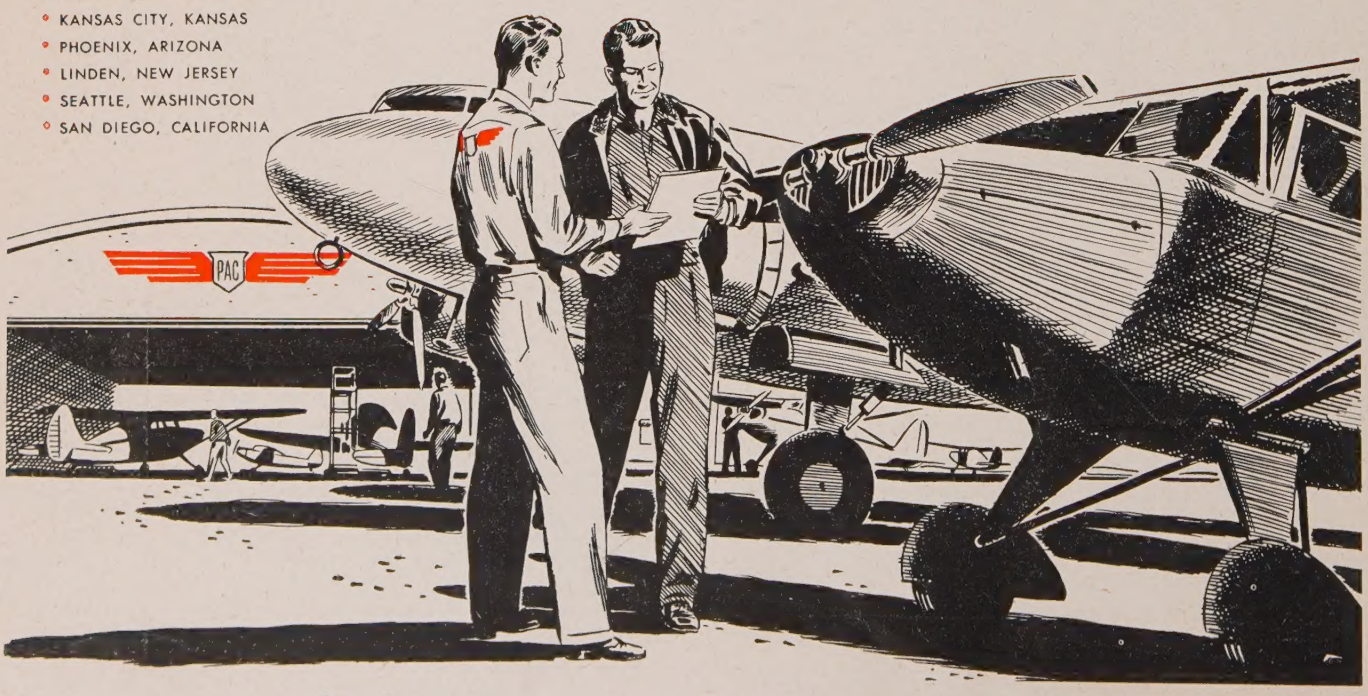
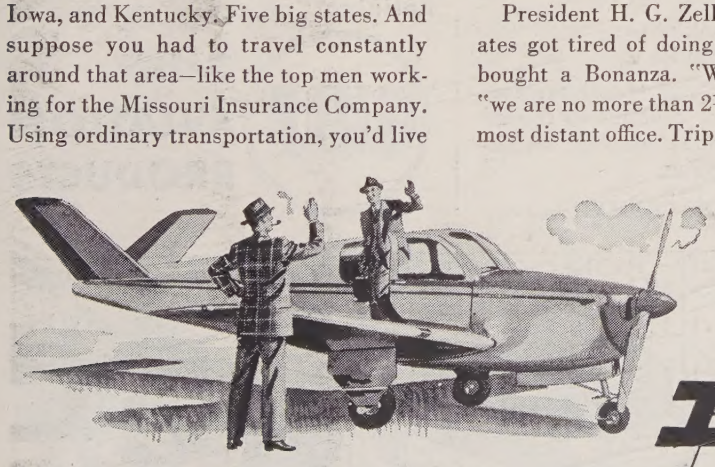


Works in five states ...home every night

SUPPOSE your business were spread out over Missouri, Illinois, Kansas, Iowa, and Kentucky. Five big states. And suppose you had to travel constantly around that area—like the top men working for the Missouri Insurance Company. Using ordinary transportation, you'd live out of your bag, and see your home once a fortnight, if you were lucky.

President H. G. Zelle and his associates got tired of doing that, so the firm bought a Bonanza. "With it," he says, "we are no more than 2½ hours from our most distant office. Trips formerly requiring several days can be completed in comfort and without fatigue *in one day*."

Economy? Operating cost as low as 1¢ per passenger mile! Of a recent trip, Mr. Zelle says: "Fare by other means would be about $47 for myself and son. Fuel and oil cost by Bonanza—$6.80."



A note on your company letterhead will bring an informative brochure on "The Air Fleet of American Business." Write today to Beech Aircraft Corporation, Wichita, Kansas, U. S. A.

Top speed, 184 mph; cruising speed, 172 mph; range, 750 miles

BEECHCRAFT **BONANZA** MODEL 35

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

Vol. 7, No. 5, May, 1948. SKYWAYS including THE FLYING SPORTSMAN is published monthly by Henry Publishing Company, 444 Madison Ave., New York 22, N. Y. Printed in U.S.A. Single copy, 25 cents. Subscription Prices: U.S., possessions, Canada and Pan-Am. Union, $7.00 for three years, $5.00 for two years, $3.00 for one year; all other countries, add $1.50 per year for postage. Six weeks required for address changes (give both old and new address). Manuscripts, drawings, other material must be accompanied by stamped, self-addressed envelope. SKYWAYS including THE FLYING SPORTSMAN is not responsible for unsolicited material. Reentered as second-class matter Oct. 30, 1947, at the post office at New York, N. Y., under the Act of March 3, 1879.

The Birdmen's Perch

By *Major Al Williams*, ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

Arizona is the type place we like!

Know what they're doing in Arizona?

A newspaper and an association of flyers down there have set to work air-marking every community of more than 100 population!

And in the first six months of their campaign they completed 103 of the air-markers . . . figure on having the whole job (150 markers) done about the time you read this!

We like people like that who get up and git instead of sitting around discussing the situation. Any situation.

We flap our tattered wing tips in admiration for the Arizona boys!

They gave us a great idea, too. It's in the next paragraph.

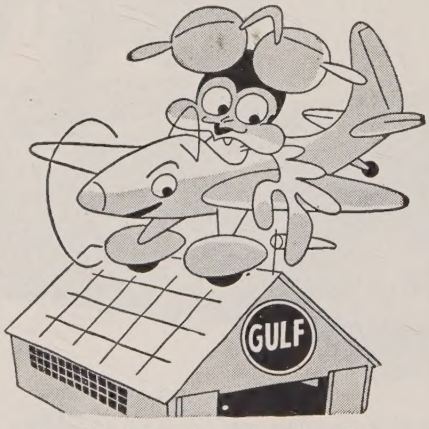
ON YOUR MARK

Our great idea is about marking, also.

You can see a lot of Gulf Discs at airports around the country, which say "Here's the place to get Gulf Aviation Products" . . such as Gulfpride Oil.

And while these discs remind you to use Gulfpride Oil, they don't remind you *why* you should use it!

They don't remind you of the Alchlor Process, that extra refining step that gets extra carbon-and-sludge-formers out of Gulfpride *after it's already been refined!* They don't remind you how much more and better lubrication you get quart-for-quart from Gulfpride.



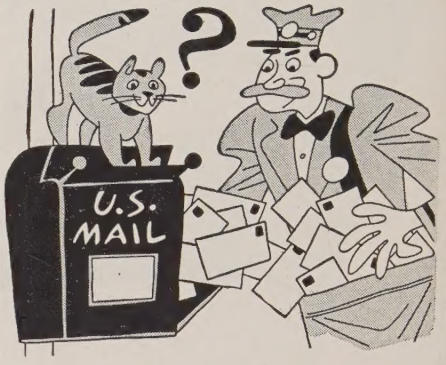
Our idea is to write these facts in huge letters beneath the Orange Discs.

But we can't think of any place where there's enough room for them.

Until we figure this knotty problem out, you'll have to continue to remind *yourself* of Gulfpride's tougher, longer-lasting lubricating film.

Which you can do by using it!

BLANK DEPT.



This is the Blank Dept. this month, because we still haven't figured what you Perch Pilots want here.

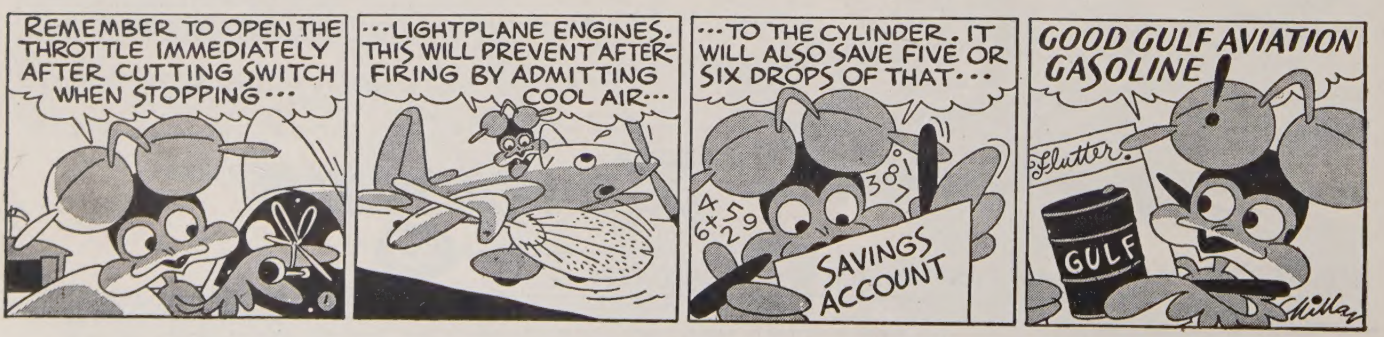
We'll admit your letters did finally start rolling in. A lot of you want to continue the Little Known Facts Dept. Some of you want a Pet Pilot Peeve or Favorite Flying Gripe Dept.

And one diplomat even suggested alternating Little Known Facts with Favorite Flying Gripes!

We'll try to let you know next month, because by next month we figure we'll have enough mail to show clearly what you like to read.

If we have, we'll announce the name of this department.

Send your idea to the address up above, there.



SKYWAYS

Due to conditions beyond our control, a temporary change has had to be made in SKYWAYS' style and type. As soon as the emergency is over, SKYWAYS will again return to its quality presentation.

Cover by Wayne Davis :— **PANTHER**

J. FRED HENRY . . . . Editor and Publisher
D. N. AHNSTROM . . . Managing Editor
STANLEY M. COOK . Production Manager
CHARLES W. ADAMS . . . . Art Director
E. E. SCHAFER . . . Circulation Manager
ALICE ROGERS HAGER Washington Corresp.

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AIR views

Opening up before us—air carriers and aircraft manufacturers alike—is a great revenue potential that has been slow in developing

I'm speaking, of course, of the future in air cargo, as contrasted with passenger revenue. Only since the war have the vast opportunities in this field been approached realistically. There is still a long way to go.

Even today, for example, 95% of the revenue of all U. S. air transportation companies comes from carrying passengers; only 5% from freight. Contrast this with rail transportation, which gets 18% of its total revenue from passengers and 82% from freight!

Naturally, the flying of passengers will always remain a vital and glamorous part of our aviation picture. But there is reason to believe that the flying of cargo offers far more dollars and cents return.

What seems called for now is more careful over-all planning toward the successful handling of air cargo, and a long-range program for selling this service to management.

Cargo compartments of passenger planes and converted passenger planes must be replaced with aircraft specifically designed to handle cargo. Standard methods of tying down and loading and unloading must be devised. And fair rates established on a competitive basis.

In meeting and solving these problems, we here at Douglas stand ready to aid the air carriers in every possible way.

Donald W. Douglas

PRESIDENT
DOUGLAS AIRCRAFT COMPANY, INC.
SANTA MONICA, CALIFORNIA

AIR YOUR VIEWS

EASY DOES IT...

Gentlemen:

In your article, "Easy Does It ...By Plane," in the February issue, I came across the most well-put paragraph I have had the pleasure of reading in years. It read:

"Some day all the horse and buggy enthusiasts in the head positions of the Nat'l Park Service will die or blow away..."

The NPS takes the same attitude in regard to ski lifts in the Park as they do about landing strips. A ski lift or an air strip could be put in, with discretion and proper planning, without harming the natural beauty of the Nat'l. Parks.

G. McConkey, Jr.
Ft. Collins, Colo.

This office has received a number of complaining letters about the National Park Service opposition to aviation, etc. Perhaps if enough people were to complain directly to the NPS, those horse-and-buggy enthusiasts would hitch ole Dobbin to the shay...and make room for up-to-date planning.--Ed.

Gentlemen:

After reading "Easy Does It...", I want to offer even more proof. I am a student at North Texas State College, about 160 miles from my home. By train the trip home takes four hours; via bus it takes four hours, too. Certainly for a mid-semester visit home, this travel time is not good.

Last year on my 17th birthday, I got my Private ticket. Now I leave school early Saturday morning and am home in 90 minutes, via my new Luscombe. Hitchhikers that ride with me buy gas, so I save money as well as time.

J. Goodman
Denton, Texas

Congratulations, Mr. Goodman, on your getting such excellent use of your plane. We bet you're one of the most popular fellows in school.--Ed.

WHERE TO FLY...

Gentlemen:

In your February "Where to Fly," you did not mention Hondo Municipal Airport, the finest airport in Texas. GI Navigators will remember that field because it was the home of the USAF's Hondo Navigation School and it offered beautiful flying weather all year 'round. In addition, it has the best, longest and finest concrete runways in the whole state. The airport houses the Holloway Flying School (Accredited).

Hondo is 40 miles west of San Antonio.

J.F. Jungman
Houston, Texas

We apologize to Texas, to Hondo Field and to Mr. Jungman for our failure to report this excellent airport on our "Where-to-Fly" page.--Ed.

Your personal-airplane dollar buys proven big-plane features when you invest in a Swift 125

IF YOU HAVE plenty of time and money to spend on flying as a hobby, then there are a number of good airplanes that you can enjoy. But if you want an airplane **that pays its own way** in utility and time saved then your answer is a Swift 125.

The Swift 125 is the only all-metal, low-wing, cross-country airplane that sells for less than $6,000. Almost any pilot who knows the Swift 125 will tell you it is safe and easy to fly ... as well as thrifty to own. Flying costs are low. Maintenance is economical. Easily replaceable metal wing tips and wing sections cut down repair bills.

Fly the new Swift 125 at your Dealer's and see for yourself what a lot more airplane you get for your money. Write today for name and address of the Swift Dealer near your home.

$3,495 Standard 125 H.P., F.A.F. Dallas, Texas Deluxe equipment listed in this ad costs about $500 extra. Immediate delivery.

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- Self Starter and Generator
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- Two-way GE Radio (deluxe models)
- Aeromatic ® Propeller (deluxe models)

THE Swift

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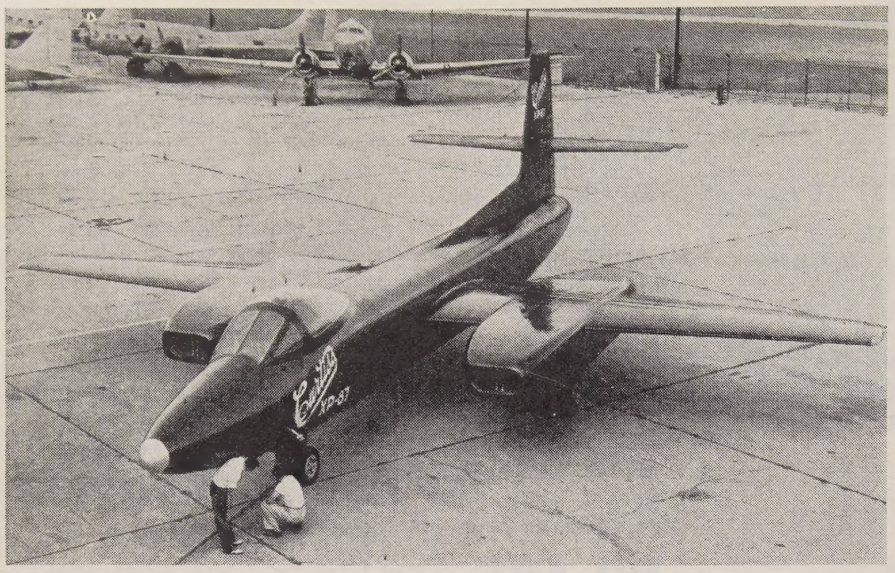


AIR FORCE'S NEWEST JET FIGHTER, THE CURTISS XP-87

MILITARY AVIATION

SENTRY-DUTY FIGHTER

For the first time since the battle-honored P-40 *Kittyhawk* returned from active duty with the Air Force in 1944, a fighter plane bearing the Curtiss Wright name plate has risen in the combat skies. The new ship, the two-man XP-87, is the world's most powerful fighter. It is equipped with four 24C axial-type Westinghouse jet engines which will generate as much power as a giant class electric locomotive, and which can push it through the air for 1500 miles at speeds "in the neighborhood" of 600 mph. The gross weight of the new shiny black jet is almost equal to that of the B-17 "Heavy" bombers of World War II. Reversing the usual relationship of length and the span, the XP-87 measures approximately 60 feet in length and 65 feet from wing-tip to wing-tip.

Little has been released concerning flight tests now being conducted by Curtiss Wright at Muroc, except that company officials have been "extremely pleased." Even less, however, has been released as to the function of the second man in the cockpit. It is generally assumed that he is there to read radar, but no official announcement has as yet been made to that effect.

Reconciled to the prospect that in any future war we will be struck before we strike, the designers of the XP-87 seem to have built a ship for the primary purpose of doing sentry duty. The plane's range, its ability to fly in all kinds of weather, and its detection devices all go to make it an excellent instrument to smell out and intercept any foreign attack as far from our own shores as possible. Its speed and firepower, of which there is considerable, make it an equally fine weapon to take care of the situation after the attack has been met.

So far the USAF has given Curtiss Wright a contract for only the usual three experimental models, but unless appropriations are seriously cut, an additional production contract will be let at an early date.

ANOTHER A-BOMB TEST

The most carefully concealed military operation since the bombing of Nagasaki is the new atomic experiment now being conducted (or readied) at Eniwetok. Unlike the case at Bikini, there are few people outside Lt. General J.E. Hulls' Joint Task Force who know what sort of atomic weapon is to be tested, against what kind of target, or how it will be delivered.

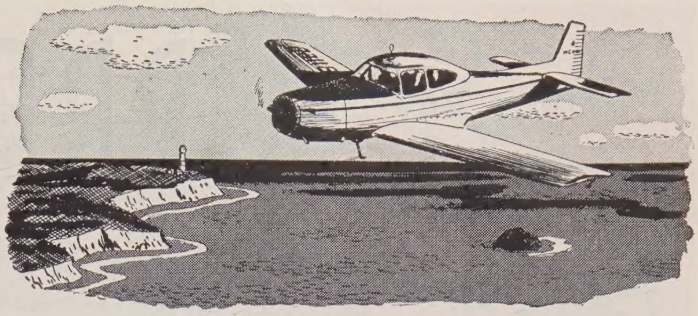
But if the purpose of the experiment is to round out the military research begun at Bikini, it is logical to assume that the Eniwetok tests will begin where Bikini left off -- that is, in the conduct of an underwater explosion.

The underwater test at Bikini (the third and last of the original series) was called off, it will be remembered, by President Truman at a time when the information such an experiment would yield seemed of less importance than the further rift it might create in relations between the U.S. and Russia. However, the situation now is just the reverse and so once again the caravan of men, ships and equipment has started out into the blue Pacific.

The underwater explosion (if such there is to be) will unquestionably prove far more illuminating than either of the first two. Shock waves created by the detonation of an A-bomb under water will travel further and faster and, since water doesn't give, cause far greater damage than a blast of the same force in the air. So great a difference has been calculated in the two different ways of using the bomb that scientists who predicted the results of the first two tests at Bikini within 5 percent accuracy refuse even to hazard a guess as to what might happen in the underwater explosion. They confessed they could be 100 percent in error.

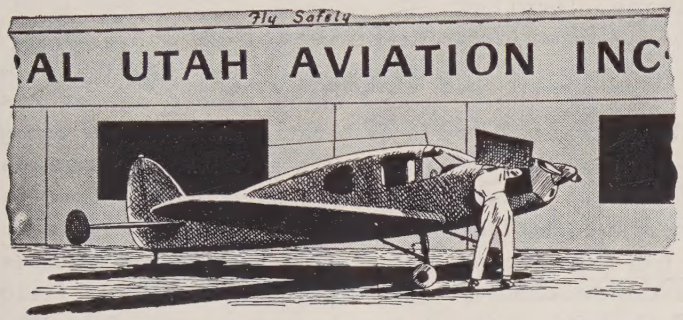
Thus Eniwetok holds a possible promise of proving more conclusively than did Billy Mitchell or Bikini that the battleship is no longer an efficient weapon of war. What will be done with those conclusions after interested groups in Washington are through evaluating and interpreting them may be a different story.

Standard of California's PLANE FAX



A page of service tips for private flyers and fixed-base operators

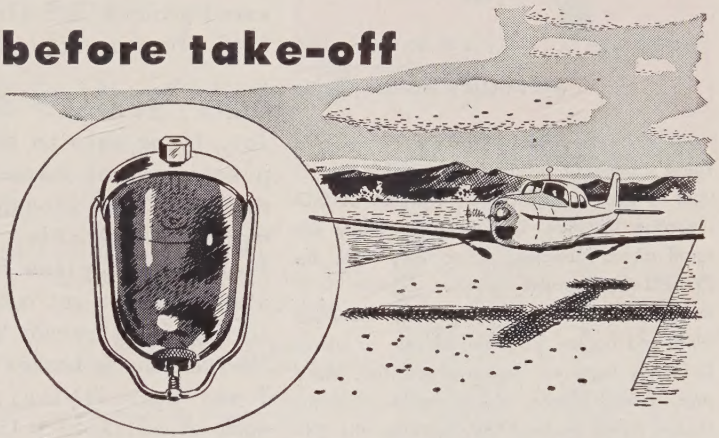
Central Utah Aviation Cuts Maintenance Costs



Edgar A. Poe and Myron W. Jense, of Central Utah Aviation, a flying school and transport service at Provo Municipal Airport, operate eleven planes. Overhaul periods ran from 150 to 200 hours. Mr. Jense writes: "Not being satisfied with this situation we changed to RPM Aviation Oil . . . overhaul periods now range from 560 to 600 hours. This, as you can see, has cut our maintenance overhead considerably."

Check your fuel system before take-off

It's a good policy to remove dirt and water from your fuel system during preflight inspection, because they can prove just as embarrassing as an empty tank. To avoid the possibility of trouble in the air, check your filter bowl and strainers and drain tank sumps before taking off. Another good policy is to use Chevron Aviation Gasoline because it's perfectly balanced for starting and cruising.



Instrument care on the ground pays off in the air

Proper care of aviation instruments is a precaution that pays off at crucial moments. A special instrument lubricant is required for full protection. The anti-rusting ingredient in RPM Aviation Instrument Oil protects gyro and other instrument bearings from rust due to condensation often found with ordinary oils.

Use a Chevron National Credit Card

If you reside in the West, write Standard of California, 225 Bush Street, Room 1618, San Francisco 20, California, or ask the Standard Airport Dealer at your field for an application blank. Chevron National Credit Cards are good at airports throughout the United States, Canada and Alaska.

"Play Safe . . . File a Flight Plan"

CHEVRON AVIATION GASOLINE

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Standard Oil Company of California

PROP WASH

Aero Oddities

TWIN WINS. A father and son model-airplane team entered their ships in Model Meet at Philadelphia and won Grand Prize... an Ercoupe. Few weeks later, they entered another model contest, won another Grand Prize... another Ercoupe. (W. Gibson, Belmar, New Jersey)

AIR/SNOW RESCUE. When his car became stuck in snow, Montana man climbed out, started to walk away. At that moment a lightplane on skis landed, two boys jumped out, pushed man's car out of snow, waved goodbye and flew off again. (J.C. Truman, Troy, New York)

CHECK, PLEASE. Student pilot, flying solo to build up time, practiced air maneuvers for 30 minutes, then brought the plane, equipped with skis, back to home field. When plane slid to stop, student pilot got out, ambled over to Chief Instructor and reported, "Better check brakes on that ship I was just flying... they don't work at all." (J.P. Cuda, Corning, New York)

UP... AND OUT. Student pilot, practicing crosswind landings, came in too hot. Bounced once... ...twice, then nosed up in freshly plowed dirt at end of runway. Student climbed out, pulled ship down to level position, called mechanic. Mech wiped dirt off prop, checked whole ship, gave his okay, and student took off for home field, neither plane nor pilot any the worse for wear. (W. R. Hecox, Champaign, Illinois)

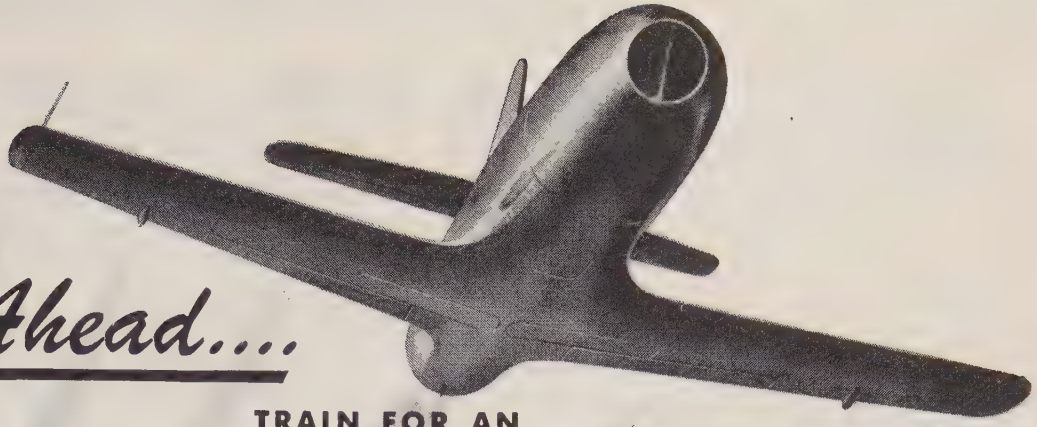
WASHED OUT. Pilot bought a BT-13, decided to fly it home. At dusk, pilot called Wheeling, W.Va., airport tower for permission to land. Spotting what he thought were runway lights, pilot brought ship in... and made beautiful landing on smooth runway that proved to be Ohio River. (J.B. Longworth, Jr., Martinsville, Va.)

NO BUSINESS. Lost on X-C flight, Air Force cadet flew around until almost out of gas. In desperation he flew low enough to attract motorist's attention, throttled back and at tree-top level shouted his predicament. Using car's headlights, motorist guided pilot to unlighted field, helped bring him down safely. When cadet piled out of plane to thank motorist, he found him to be the local undertaker driving the county ambulance. (L.G. Hester, Sharp Park, California)

ROBOT PLANE. In propping his plane, pilot let ship get away from him and take-off minus anyone at controls. Ship climbed, straightened out, flew level course. Aircraft on field took off to give chase, but lost run away ship in the confusion. Two hours later, excited rancher telephoned field to report, "A plane just made emergency landing on my ranch, but I can't locate the pilot!" Plane was completely undamaged, was flown back to field by its red-faced owner. (J. Hennessey, New York)

Att'n Readers:

If you have any news note oddities pertaining to aviation, send them to SKYWAYS, Box, 17, 444 Madison Avenue, New York 22, N. Y. Five dollars will be paid the sender of each "oddity" printed. Contributions cannot be returned unless accompanied by stamped addressed envelope. The decision of the editors is final.



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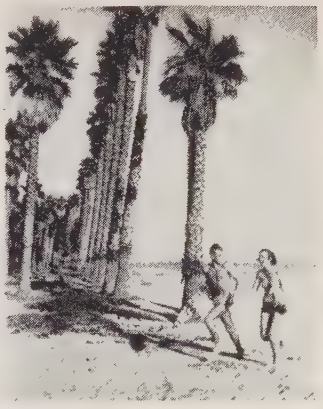
WE HAVE THE EXPERIENCE—THERE IS NO SUBSTITUTE FOR IT

Cal-Aero has solved the housing problem! Board, room and transportation is now available right here on Grand Central Air Terminal.

APPROVED FOR VETERANS

TRAIN IN SUNNY SOUTHERN CALIFORNIA



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Check one: ☐ Veteran ☐ Non-Veteran S

AIR NEWS

FLIGHT TESTS

The XF6U-1 *Pirate*, Chance Vought's jet fighter plane designed and built for the Navy, recently passed its Navy flight tests at Patuxent, Maryland. This fast fighter plane is largely constructed of Metalite sandwich materials for smooth finish. The ship that successfully completed the Navy tests was equipped with new wingtip tanks especially designed to spring clear of the plane when they are released. A sizable quantity of XF6U-1's has been ordered by the Navy for service tests.

BOAC BOEING

British Overseas Airways Corporation has an order in for six Boeing Stratocruisers, and is expected to accept delivery on them beginning this summer. Apparently the purchase of the twin-deck Boeing airliner has not met with the approval of all sources in England. Despite this, however, the Ministry of Civil Aviation is going ahead with plans to get the Boeings. Bone of contention seems to be whether or not the big Boeing can be operated at a profit.

ALL-WEATHER COPTER BLADES

The USAF Prop Laboratory at Wright Field is now putting stainless steel helicopter blades, developed by Goodyear Aircraft, through exhaustive tests. So far the flight tests of these blades, installed on an R-5 Sikorsky, indicate they have better lift characteristics than the conventional blades and may be flown safely in light or heavy rains. Outstanding feature of the Goodyear-developed 'copterblade is the de icing system incorporated in its construction. A flexible tube at the rotor head carries hot air to the root of the blade and along the leading edge.

LOCKHEED LANDING GEAR

Two years of study on the part of research engineers at Lockheed have resulted in the development of a new safety device that may bring about a drastic reduction in landing gear accidents. Lockheed study showed that loads in excess of design values were being experienced even in normal landings. These loads were due to dynamic overloading of the landing gear at the moment the plane contacts the runway and the wheels spin-up from standing still to the plane's ground speed (all in about a tenth of a second). As an answer, Lockheed developed a hydraulic damping device to replace the former rigid brace and permit a rearward motion of the landing main gear wheels. Flight tests on the Constellation proved the value of the damping device and today every Constellation that is flying either has had the device installed or is having it put on at this time.

CHANCE VOUGHT MOVE

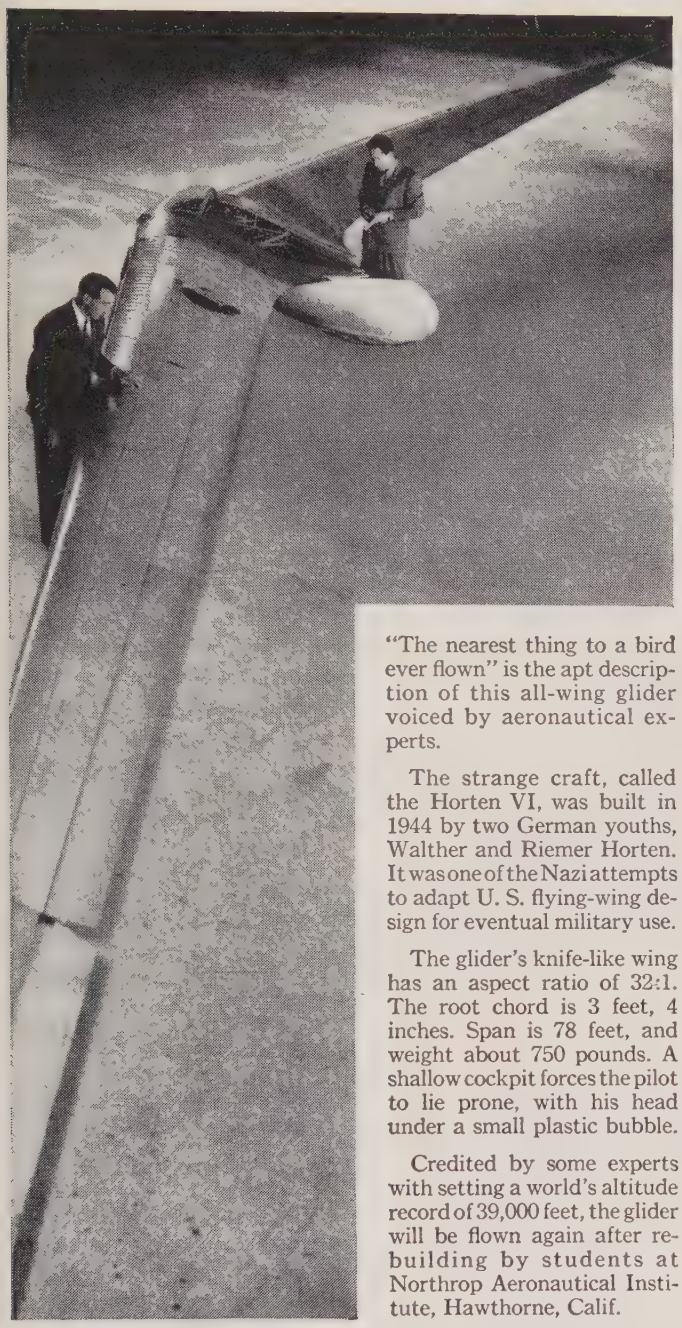
When the Chance Vought F4U production contract has been completed, the company will move its quarters from Stratford, Connecticut, to Grand Prairie, Texas. Chance Vought is taking over a plant formerly used by North American Aviation, and C-V production will begin on jet types. The move is not expected to take place until next fall.

DOVE ON FLOATS

The De Havilland Aircraft Company of Canada recently converted one of its twin-engine transports, the *Dove*, for water operations. Now equipped with Edo-design floats, the *Dove* has been undergoing extensive flight tests. Canadian manufacturing rights for Edo floats have been acquired by MacDonald Brothers Aircraft, Ltd., and that company is supplying float equipment to the De Havilland Company.

DE HAVILLAND DOVE, built by De Havilland in U.K., is now being flight tested in Canada for water operations. Floats are Edo-designed, built by MacDonald Brothers Aircraft

CAPTURED GERMAN ALL-WING GLIDER



"The nearest thing to a bird ever flown" is the apt description of this all-wing glider voiced by aeronautical experts.

The strange craft, called the Horten VI, was built in 1944 by two German youths, Walther and Riemer Horten. It was one of the Nazi attempts to adapt U. S. flying-wing design for eventual military use.

The glider's knife-like wing has an aspect ratio of 32:1. The root chord is 3 feet, 4 inches. Span is 78 feet, and weight about 750 pounds. A shallow cockpit forces the pilot to lie prone, with his head under a small plastic bubble.

Credited by some experts with setting a world's altitude record of 39,000 feet, the glider will be flown again after rebuilding by students at Northrop Aeronautical Institute, Hawthorne, Calif.

Being Analyzed by Students in Engineering and Mechanics Classes at Northrop

The picturesque craft shown at the left was captured in Germany during the war, sent to Wright Field, and more recently turned over to Northrop Aircraft, Inc., Hawthorne, Calif. Now it is a subject of study in the Aeronautical Institute division of the aircraft company. Engineering and mechanics students are studying and evaluating the glider's construction and aerodynamic characteristics. Data from the studies will be used in designing and building an all-wing glider as a student project.

This is typical of the practical and interesting assignments in Northrop training. Another project, a student-designed and built twin-boom pusher type monoplane, is fast approaching the flight test stage. Many other day-to-day shop and laboratory assignments are provided by wind-tunnel models, mockups, and experimental aircraft–all transferred to the Institute from the Northrop research and development laboratories. Both engineering and mechanic students enjoy the extraordinary privilege of contact, in this way, with latest developments in design and construction.

The technical institute conducted by Northrop, famous as builders of the spectacular Flying Wings, is located in the midst of the company's busy center of aircraft research, development, and manufacturing. The students were among the first to see the great 8-jet Flying Wing and viewed its first take-off from the mile-long Northrop Field runway at the Institute's "back door."

The Northrop school is one of the few technical institutes offering an aeronautical engineering curriculum approved by the Engineers' Council for Professional Development. Its Aircraft and Engine Mechanics course is approved by the Civil Aeronautics Administration. Both types of training are open to both veterans and non-veterans. Classes start at frequent intervals. Graduates hold important positions with many leading aircraft and airline companies throughout the world, besides being employed in Northrop's own plants.

The Most Desperate Gamble in History

AN EDITORIAL

Hitler's action phase of his Cold War began with the march into Austria; Stalin's with the taking over of Hungary. Hitler changed his pattern to the shooting phase when he swept over Poland. The Slav is more subtle: Czechoslovakia, Finland are added to the Balkan "rim" by "loyal citizens" who "oppose treason by imperialist subversives."

The pawns are being advanced farther and faster towards the Western Wall of the Atlantic. The grim march across Europe -- under the Soviet aegis -- sounds ever more loudly with the echo of the war drums. Czechoslovakia is nearly a thousand miles closer to the point from which long-range bombers can operate against America.

In the far north, the Bear's shadow lies across Alaska and its atom-tipped claws are flexing hungrily for the heart of our homeland. England has resumed wartime censorship. We have an air base again in North Africa and our aircraft carriers are standing guard in the Mediterranean, keeping a watchful eye on Greece and Turkey.

There has never been a more fateful moment in history. The whole future hangs on today's decisions.

It is into this arena that the tense and dramatic report of the Congressional Aviation Policy Board has been hurled. "Until men of all nations can meet in good will in the council chambers of the world, anything less than complete supremacy in air power (for the United States) is self deception!

"It is folly to pretend that the world does not live under a sense of impending tragedy. Deliberately and continuously, we are faced with the possibility of aggressive attack. The deadly character of the new weapons makes war an open invitation to mass annihilation. Until there is a solid foundation upon which freemen can build for security and survival, the same freemen, who seek only self-preservation with justice and freedom, (must) defend themselves. ...The United States has no other course to follow but to maintain such a military air force and civil air effort that... any attack will prompt swift and awful retribution."

This was the judgement of a Joint Board of five Senators and five Congressmen after six months' intensive study, in executive session, of the facts behind the news. It was a bipartisan Board of anxious men, grimly aware of the magnitude of its deliberations. One of the results was a first "Bill of Rights" for aviation -- a clear concept which constitutes a long step forward out of our mass confusion.

"National air power is an entity not fundamentally divisible as a weapon or as a carrier. Materials, organizations and craftsmanship which go to make a great aviation industry are as readily turned to the combat plane as to the transport. Airway facilities which give scheduled dependability to civil air lines also give tactical dependability to military air forces. Airports which serve the burden of national and international traffic also can base tactical or strategic combat squadrons. Transport fleets which serve commerce in peace can tie together tactical and administrative requirements in war. Hence, it is the conviction of the Congressional Aviation Policy Board that a strong, stable, and modern civil aviation component is essential to air power for national security."

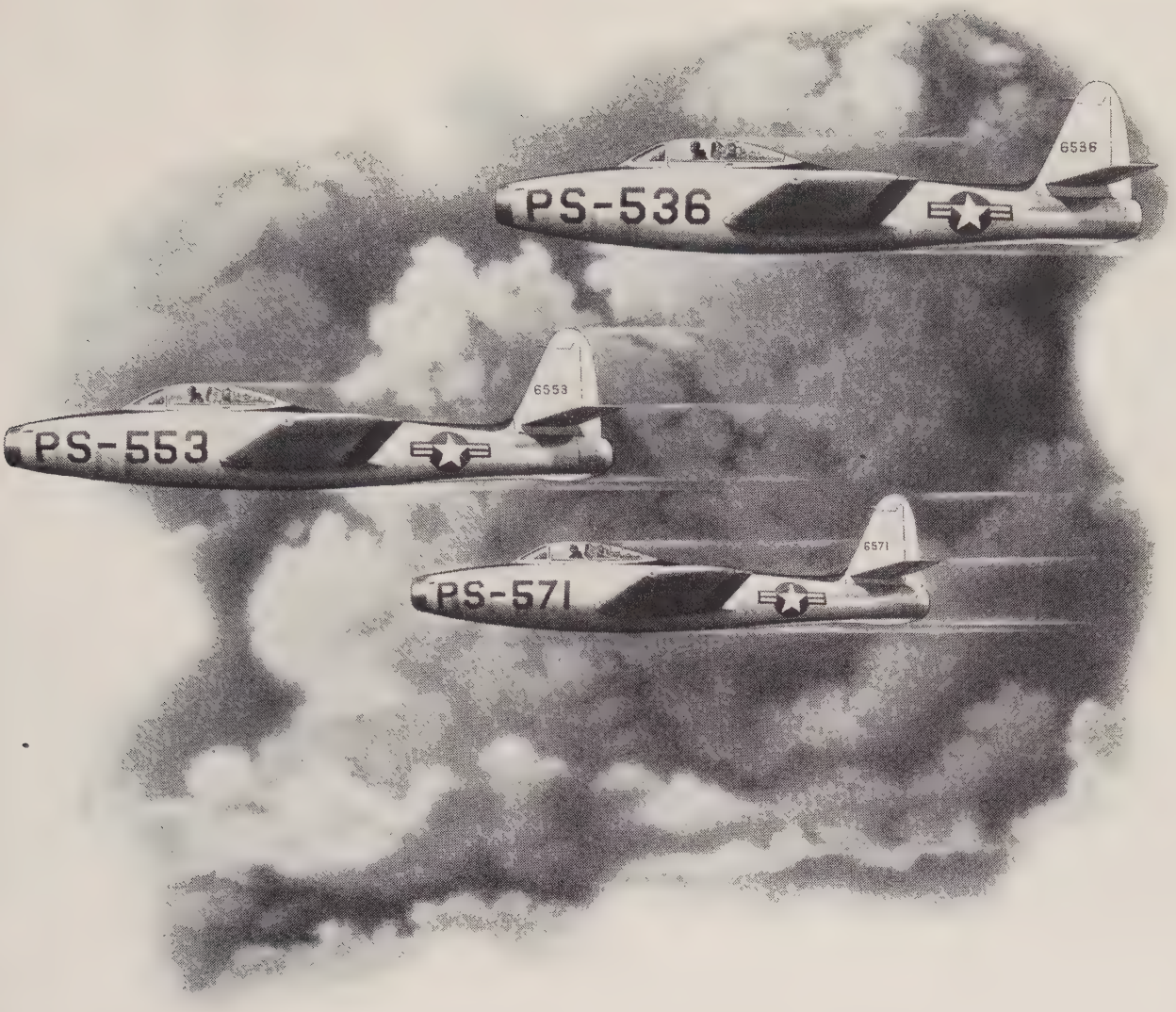
In view of the tremendous scope of the subject which the Board handled, the modest appearing 54-page document is misleading. It is probably one of the most concentrated Congressional reports in history -- but, make no mistake, history is implicit in every page. The whole fabric of aviation will benefit from its terse and tough-minded recommendations, *if* Congress sees fit to take action on them. Some parts of the industry may feel, on their first consideration of the report, that they have been seriously neglected. This will be particularly true of the fixed-base operators and the lightplane manufacturers.

Certain factors, however, must be kept in mind. This was a Policy Board, deciding issues against the background of events so filled with peril for our way of life that every decision had to be made in their shadow. Congress deals with policy and with the peoples' money and the Board's inevitable question on every problem presented was "What priority must this matter assume in the total concept of our need?" It was imperative that first things came first. Those first things were the recommendations for immediate and drastic increase of appropriations for the military air services; authorization of long-range procurement of combat aircraft; heavy emphasis on development of nuclear propulsion of aircraft (the hitherto top secret NEPA Project); concentration on building or improvement of big airports which will provide all-weather operation of both commercial and military air movements, and of Federal financing for development of improved types of cargo and transport planes.

If Congress passes the necessary legislation for these major projects, the aircraft industry will be able to develop on a sound basis, with the possibility of planning its work five years ahead, holding its vital production teams and gearing itself for any suddenly needed expansion.

One job remains to be done. It is a political year and the voice of the people resounds loudly under the Capitol Dome. Let your Congressman know you want *action now* on the legislation needed to implement the Report.

J. Fred Henry



PROVEN IN SERVICE . . .

Worthy successor to the mighty THUNDERBOLT . . . the new P-84 THUNDERJET now being flown by two famous groups of the U.S.A.F. . . . the 14th, based at Dow Air Force Base, Bangor, Me., and the 20th at Shaw Air Force Base, Sumter, S. C., are daily demonstrating the high efficiency of this, the latest jet fighter on active service. ¶ Soon other groups will be equipped with this 600 MPH THUNDERJET. We are indeed gratified that the close co-operation between the U.S.A.F. and REPUBLIC's skilled design and production personnel has resulted in the development of another great combat plane for the security and protection of our nation.

REPUBLIC AVIATION CORP., FARMINGDALE, L. I., N. Y.

"This Is the Year of the Thunderjet"

AIR POWER US A F IS PEACE POWER

REPUBLIC AVIATION

Makers of the Mighty Thunderbolt • Thunderjet • XF-12

Action of the Goodyear Tire and Rubber Company's crosswind landing gear is demonstrated in this photo of gear on a new Stinson

HANGAR FLYING

ALL-AMERICAN MANEUVERS

For the first time in 17 years, the All-American Air Maneuvers in 1949 will include participants from Latin American nations. Top event in this next meet at Miami, Florida, will be a free-for-all race around South America, similar to the Bendix Trophy Race in the Nat'ls. The race will start and end in Miami and the winners will collect from $25,000 to $50,000. Total distance of the race will be about 10,000 miles. In addition to this big race there will be the popular $10,000 Continental Motors Race for planes in the 190-cubic inch class. Anyone wishing further details on either of these races should write to City of Miami News Bureau, Aviation Publications, Miami, Florida. Woody Thompson in that office will keep you posted.

SPEED RECORDS

A new speed record (X-C) for privately owned aircraft recently was set by David N. Laux, flying vice prexy of Sports Afield Publishing Company. Mr. Laux made a trip from Chicago to N.Y. (Roosevelt Field, L.I., actually) in just 3 hours and 20 minutes. This was a distance of 760 miles and Laux recorded an average speed of 228.6 mph in his *Bonanza*. See what a tail wind will do.

CROSSWIND GEAR

If you're a pilot who likes the idea of a crosswind landing gear and if you're in the market for a new lightplane, you can now order that plane equipped with the crosswind gear. Goodyear Tire and Rubber Company recently announced its first quantity shipment of the Goodyear gear to Cessna Aircraft and to Stinson. While Stinson and Cessna are the first to make this extra available on order, other lightplane manufacturers are expected to follow suit very shortly.

Cost for this gear on a new plane is $340.00...but if you already have your ship and want to add the crosswind gear to it, a change-over kit will be on the market for you soon.

STRAIGHT PITCH

Baseball's star pitcher, Bob Feller, recently bought himself an extra bit of safe flight insurance. This, a terrain indicator invented by Howard Hughes and known as the Hughes Radar Warning Device. The installation on Feller's Beech *Bonanza* was made by the Kansas City base of Pacific Airmotive Corporation.

OKLAHOMA SEAPLANE BASE

Land-locked Oklahoma can add another boast to its already long list. The state now possesses a seaplane base. Spartan School of Aeronautics in Tulsa, in connection with its flight school branch at Miami, Oklahoma, has begun seaplane training on Grand Lake, a large artificial body of water in northeastern Oklahoma. Primary students get their seaplane training in J-3 *Cubs*.

ANOTHER CAA BOOK

The CAA recently announced another edition of its semi-annual Flight Information Manual, a book containing 232 pages of information useful to all pilots, whether they fly *Cubs* or large cargo planes. Among the data included are: radio facility identification symbols, list of all standard broadcast stations with exact latitude and longitude, power, and tower heights (for using radio compasses and direction finders) new air traffic rules, all airports listed, instrument approach procedures and information relative to flying outside the United States.

Single copies of the Manual may be had by sending a dollar to the Superintendent of Documents, Gov't Printing Office, Washington 25, D.C.

X-C speed record for private airplane was set by Laux in Bonanza

MOST COMFORTABLE, ROOMY PLANE"...say Navion Owners

REALLY FULL-SIZED 4-PLACE CABIN"—"Most comfort-e"—"Restful and relaxing"—"Superb visibility"—those are answers several hundred *Navion* owners gave when asked t they thought of their planes. So what a surprise they'll when they see the new *Ryan Navion*, which has gone even her to earn the title of America's most comfortable per-al plane. Front seats are individually adjustable, ventilation is draft-free, and improved sound insulation makes the 1948 model one of the quietest airplanes. "Performance!"—"We get there fast—Safely"—"Short field landings and takeoffs" were other top-ranking comments. In the modern, service-refined design of the 1948 *Ryan Navion* are blended all of the most desired characteristics...no unbalanced extremes in performance have been sought at the sacrifice of other important qualities.

E"—"EASY-TO-FLY" was No. 1 on the long, rable list of comments about the 150-mph *ion*. Almost every owner stressed stability ough air, comfortable, relaxed flying and rtless control. Inter-connected rudder and ons and special wing design are some of the ons why *Navion* gives super-smooth flying.

"RUGGED"—"DON'T HAVE TO BABY IT"—"Can really take it"—these were high on the list of *Navion* owner-comments. The ability of the thick-skinned, all-metal *Navion* to stand punishment, and the sturdy tricycle landing gear with its oversized wheels and tires, are some of the reasons why the *Navion* excels.

1948 IMPROVEMENTS

1. **BEAUTIFUL HIGH-GLOSS ENAMEL FINISH** in choice of four brilliant colors.
2. **COMPLETELY NEW FUEL SYSTEM** with auxiliary electric fuel pump.
3. **IMPROVED DRAFT-FREE VENTILATION** with a greater air circulation.
4. **PERFECTED SOUND INSULATION** assures restful flying comfort.
5. **NEW INTERIOR STYLING** for greater beauty and comfort.
6. **RANGE INCREASED** to 750 miles maximum with optional 20-gallon auxiliary tank.
7. **FURTHER MECHANICAL REFINEMENTS** give better performance from plane, engine and propeller.

Write on your letterhead for illustrated booklet and name of dealer near you who will gladly furnish flight demonstration. Please state if FREE business trip by Navion interests you.

Thoroughly Proven Post-War Plane *Ryan Navion*

ly on Ryan RYAN AERONAUTICAL COMPANY • 205, LINDBERGH FIELD, SAN DIEGO 12, CALIFORNIA

Radio's tempest in teapot (Lipton's of course) is on the air via CBS; in the air via Navion

Godfrey has 2,500 flying hours, is no novice at controls and so appreciates having stall warner

High man on Hooper poll, Godfrey is also one of busiest, so owning a plane is a necessity

Off the air, Godfrey heads for airport and some in-the-air time

That Bird GODFREY

By H. E. BRENNERT

Five times weekly, against a musical backdrop of the familiar "Seems Like Old Times", CBS's Tony Marvin briskly announces it's "Arthur Godfrey Time!" And believe me, there's no time *like* Arthur Godfrey's time. For this robust-natured, jovial master of witty chatter lives the kind of life that most men dream about, and in that life, aviation plays a prominent part. How prominent, his listeners know, for rarely does he forget to tell them about this air-trip or that -- whether in his *Navion* or by airliner. Nor does he often fail to toss in an occasional plug for air-travel by mentioning the time-saving factor involved and the scenic splendor of it all.

To Godfrey, the love of flying isn't something recently acquired. It's old and deep stuff. We might even call it a geographical conditioning, for the thing was literally thrust

Alternate weeks, he flies to his home on Catoctin Ridge in Va.

Goldie, thoroughbred mare, goes cantering with the chatter-man

Mike, seven years old, enjoys looking over farm with his father

under his nose at an early age. He was raised at Hasbrouck Heights, New Jersey, which borders on and is a few hundred feet above the strip of meadow-land presently known as Teterboro Air Terminal. Of course, the place wasn't known by that name back in the days when World War I-vintaged airplanes soared off it's little 600-foot runway and flew out over Hasbrouck Heights -- much to the unsettling of one youthful Arthur Godfrey who stared longingly at them. It was just simply Teterboro -- the Teterboro of Clarence Chamberlin, Bill Diehl, and the Witteman brothers.

Yet, with all this flying going on in his own backyard,

Godfrey is home with family, daughter Pat, son Mike, wife Mary, only 5 days out of 14

Girl Friday to man who has 11 radio shows each week is pretty Miss "Mugs" Richardson

Radio stars have home chores, too. Even though he has manager, several farmhands, Great-Redheaded-Father-of-all-Disc-Jockeys over-sees his 800-acre Virginia farm

Godfrey didn't receive his initiation into the wild blue yonder until he joined the Navy in 1920. The flight was made in an F5L flying boat -- an ornery looking old buzzard with equally ornery flying characteristics. But Godfrey survived the experience and liked it so much that he's been flying ever since. He has flown everything from Aeroncas, Luscombes and *Cubs*, to multi-engined aircraft with plenty of horses. And though he has had his *Navion* only a year, he already has logged nearly 200 hours on it. Oddly, he never flew out of Teterboro until 1947 -- just 27 years and 2,500 flying hours after he left Hasbrouck Heights. And an amused twinkle lights the "Too Fat Polka" man's eyes when he relates that the old F5L of his first flight is now a museum piece in Washington. All of which may make Godfrey seem older than he is. But it must be remembered that he was only 17 when he had that first ride; and while his friend Perry Como kiddingly describes him as an "elderly gentleman," he is physically a young man -- and in infinitely better condition than the F5L.

Godfrey is truly the flying business man. Just as truly, he's the flying sportsman. And so closely does he combine the two, that not often is there a distinction in the nature of his flights.

As the business man, he flies because he has to. With his radio shows beginning in the misty grey hours before sun-up, and continuing, some days, until after dark, time is an omni-present factor at his heels.

As the sportsman, he flies because he loves to. And he doesn't wait on ideal

Early morning show gets Godfrey up with cows and chicks...and he has 250 white-face Herefords, plus 30 thoroughbred horses. All the Godfreys are excellent riders

conditions either. Let the snow-plow push the last flake off the runway, and just as long as visibility is reasonable, you'll see him calling the control tower for a get-away clearance.

The spontaneous wit and manner of expression that has placed Arthur Godfrey far above the stock-in-trade line of radio entertainers is apparently as much alive in the air as it is before the "mike." The story of his trial flight in the *Navion* seems to bear this out. Jim Taylor, a *Navion* demonstrator at that time, was flying along with Godfrey and administering the sales routine. Cruising around over Long Island, the prospective customer decided to bring the ship down at Farmingdale, then home of the famous *Seabee*.

Weeks before, Godfrey had received a demonstration ride in one of these landwater craft, but in spite of the good impression the *Seabee* made, Godfrey did not think an amphibian suited his particular needs.

Approaching the Farmingdale field, Godfrey called the control tower for landing instructions. No answer came. He called again...and still no answer. It was Saturday, and the control tower at Farmingdale is not covered on that day. Circling the field a while longer, Godfrey peered down toward the control tower, shrugged his shoulders resignedly, then turned to Jim Taylor and drawled dryly, "Maybe they won't talk to me 'cause I ain't flyin' an amphib."

Later, the flight continued on over into Westchester County. Approaching the Westchester Airport, the radio artist called the tower for instruc- *(Continued on page 48)*

Godfrey home on Catoctin Ridge, Va., was bought by radio's man-of-many-sponsors about two years ago. Streams and brooks in vicinity have been well fished by Mr. Gee

The Caterpillar Club

Parachute saved two of blimp crew when it burst into flames, crashed in Chicago, 1919

By DON GLASSMAN

On a hot afternoon in 1919, July 21 to be exact, large crowds of Chicagoans issuing from shops and offices at the end of a workday, looked up to see the "Wingfoot Express," a 158-foot blimp, burst into flames at an altitude of about 1,500 feet. With five men aboard, the ship was piloted by John A. Boettner, assisted by Henry Wacker, mechanician.

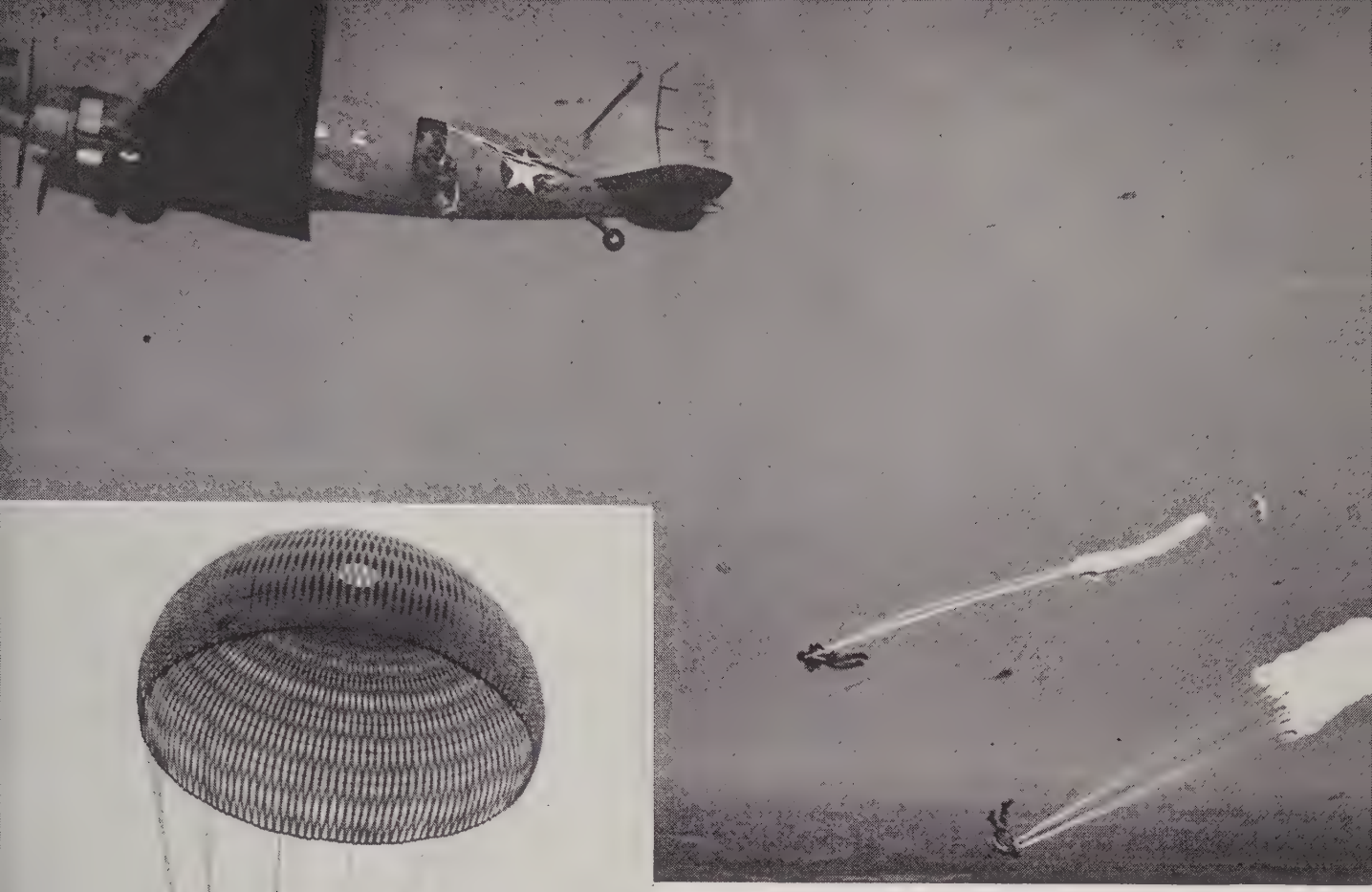
The blimp was cruising over the Loop district when the crowds saw four figures attached to parachutes jump out of the flames.

Only Wacker and Boettner survived the fall. Wacker, U.S. Caterpillar No. 1, landed on a sidewalk; Boettner, Caterpillar No. 2, landed on a roof. But the blimp crashed through the top of a bank at the corner of La Salle Street and Jackson Boulevard.

That was not the first time men had saved their lives by jumping with parachutes, but the "Wingfoot Express" incident is generally taken as a starting point of the Caterpillar Club in the United States, even though the club itself was not actually formed until three years later, in 1922.

In October of 1922, two newspapermen and an Army parachute engineer studied a collection of photographs and souvenirs taken from the wreckage of a Loening monoplane which crashed without its pilot near McCook Field, Dayton, Ohio. One of the pictures showed

Co-founders of Caterpillar Club were Milton St. Clair (below right) and the late Verne Timmerman, news photog (below left) Caterpillar Number 1 was Henry Wacker (below left); Number 2 was John Boettner (below right) Both were part of blimp crew



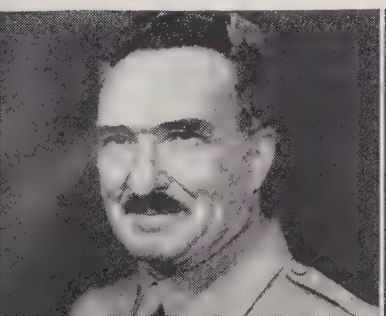
In World War II, parachutes were used to drop men and materiel at battle lines, as well as to save lives of air crewmen. Ribbon 'chute is comparatively new development

Lieutenant Harold R. Harris with the parachute which had saved his life when the Loening got out of control.

In the history of Dayton, many airmen had fallen out of the sky and never lived to draw breath thereafter. After plunging through the slats of a grape arbor and falling safely to the ground, however, Lieutenant Harris heaved relief as he gasped to a bystander, "I'm not hurt--just excited." Later he remarked, "I have seen planes crash and helped pick up dead pilots...and vowed that I would never jump except in an emergency of this kind." (*Continued on page 50*)

Caterpillar Number 4, Brig. Gen. H. Harris, was first to leap from disabled plane. He was then Lieut. Girl member is Fay Gillis

World War I member of Caterpillars was Lt. Phelps who bailed out of balloons five times. World War II added 18,000 members



A Flying Country

Constable Cones' airport is in his own backyard. Using a drag on his car, Cones cleared 1,800-foot runway. At night, he ties down his Cub in area behind his house

By DON DOWNIE

Two years ago Constable Jack Cones covered his lonely desert beat in an old sedan.

Today the 51-year-old Constable owns a *Cub*, has an airport in his backyard and a stack of newspaper clippings about the "flying Constable of Twentynine Palms."

Bitten with the flying bug when the Army glider school operated at Twentynine Palms, Mr. Cones logged a little "bootleg" flying with unnamed Army pilots. When flying restrictions were lifted along the Pacific Coast, the Constable had Bill Putnam (One Man Airport," March 1948 SKYWAYS), a former ATC pilot, teach him to fly. Then he bought a brand new *Cub* trainer.

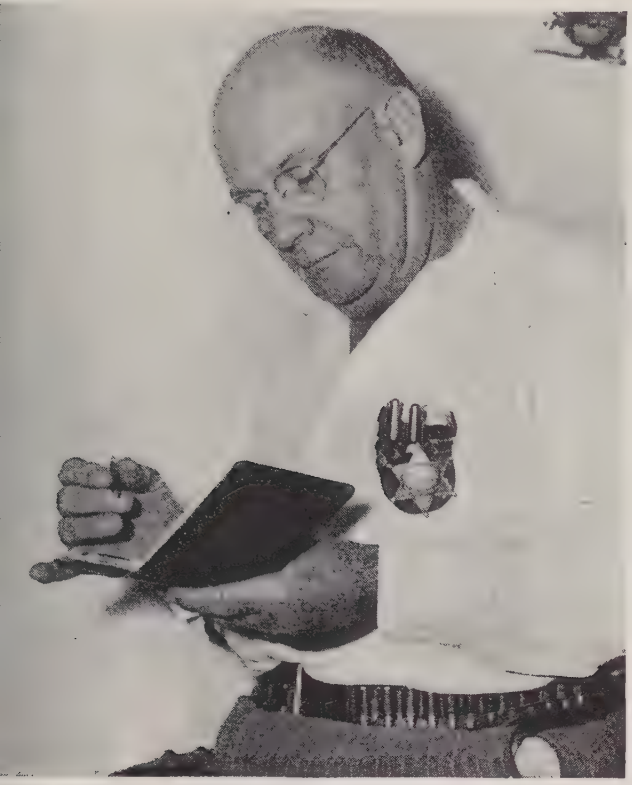
The airport was improvised. Adjoining the Cones homestead is a small, useless drylake, so the Constable hooked a drag to his car and cleared the sagebrush from the approaches and edges of the "lake." He now has one 1,800-foot runway completed and a crosswind strip under construction. In the two years that the *Cub* has been flown from his backyard, there has never been a whole day that the "drylake" was too wet from desert showers to safely land a lightplane.

Constable Cones uses his *Cub* for a multitude of things. When a lady "rock hound" failed to show up for work, friends called Mr. Cones. After an hour's search in the *Cub*, the missing amateur geologist was found, her car stuck in the sand adjoining nearby "Dead Man Lake." Because of a 35-mph surface wind, the Constable did not land beside the car, but he did fly back home and then send out help by automobile.

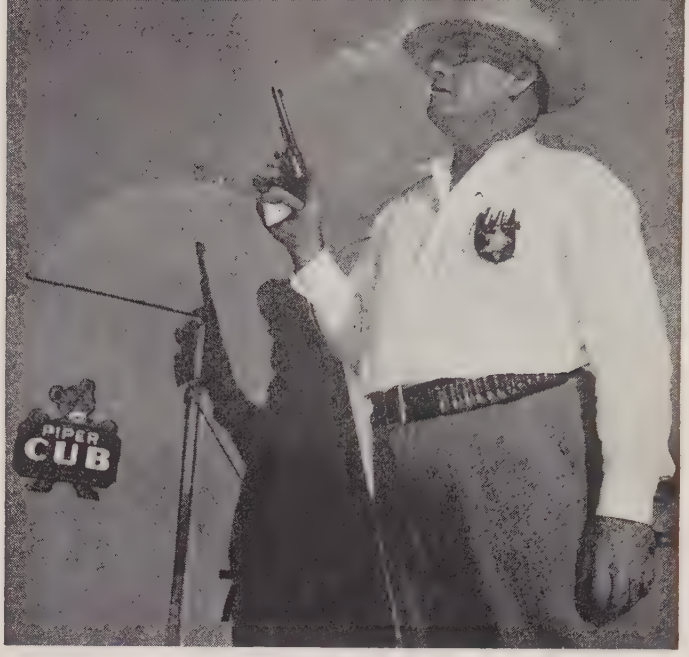
"When I want to serve people with a subpoena, I usually fly out and circle their house to make sure they are at home before I drive out," says the Constable.

In a search for an escaped lunatic, the

Constable

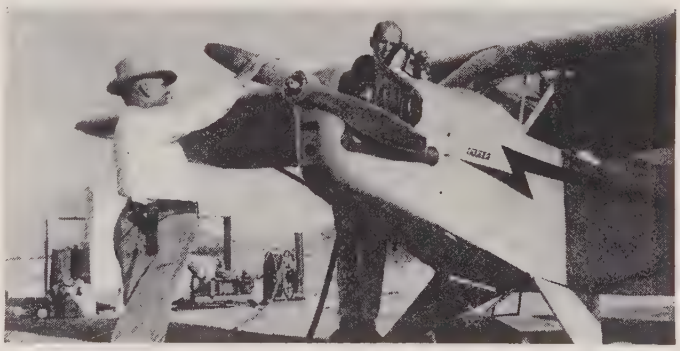


Two years of flying have netted the flying constable a total of 140 hours in air

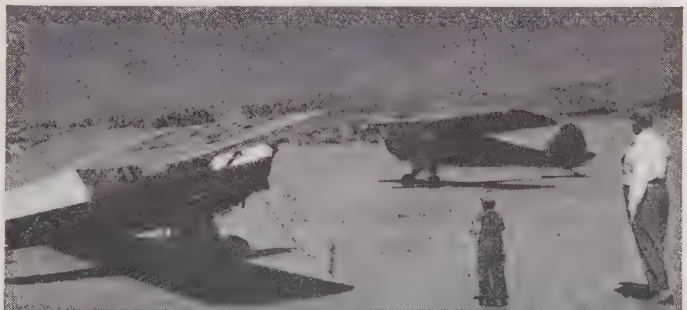


Cones is as sharp with gun as he is with spot landings...he prefers spot landings

Airport-owner Putnam taught the husky constable to fly and sold him the Piper Cub



Friends of Jack Cones are permitted to use his plane if they are careful with it. One of the air-minded law-man's best passengers is his small pilot-to-be grandson

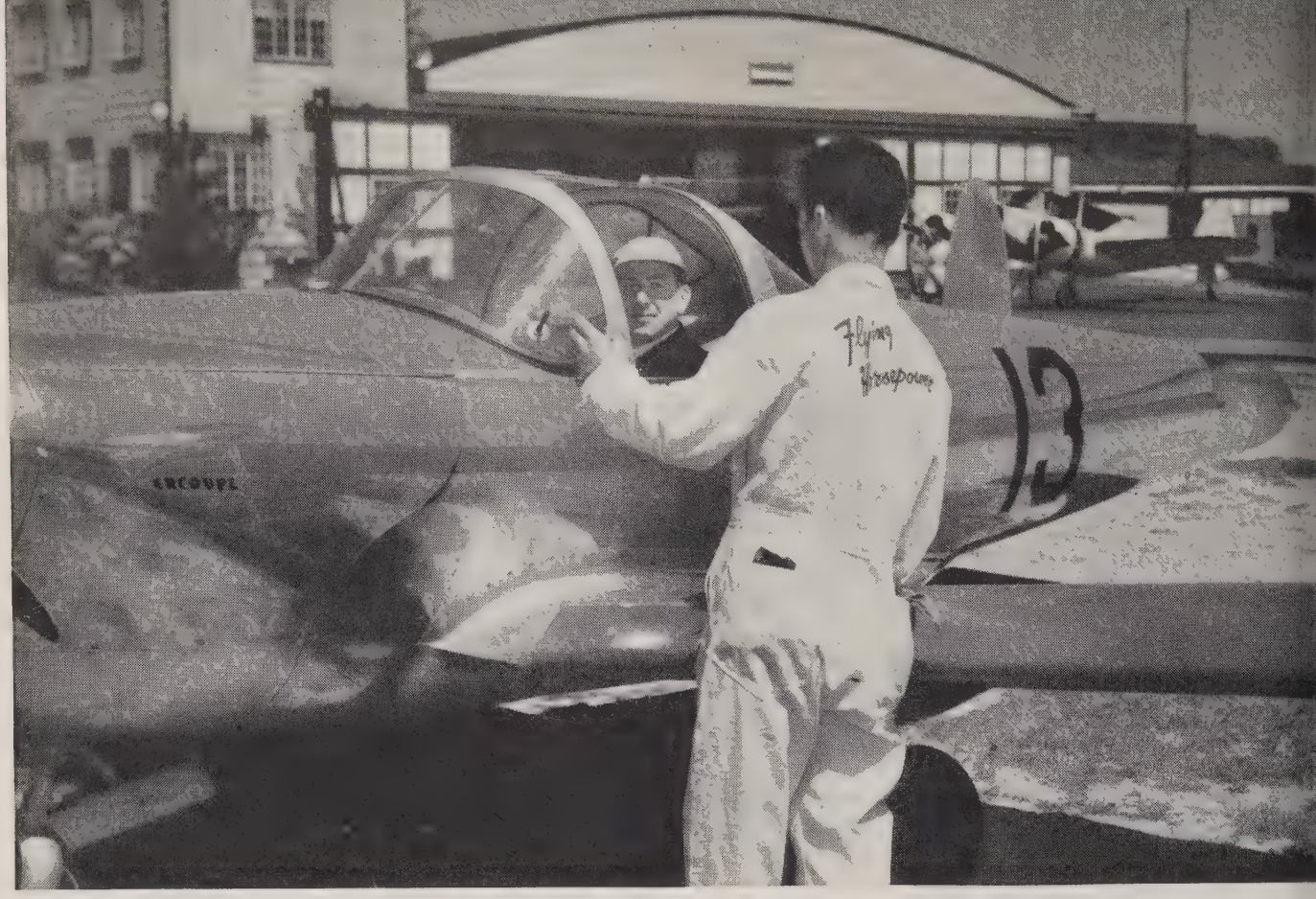


desert Constable made page-one copy in papers throughout the country. When the man was first reported in the Twentynine Palms valley, the Constable shut off his escape by landing at the smaller communities guarding the entrances to the valley, but not served by telephone, and alerted residents to be on the lookout for the fugitive. Then an air search was begun for the missing man.

"We covered more ground in two hours by plane than we could have driven in a full day," reported Cone.

The escaped man was apprehended the next day by the citizens the Flying Constable had alerted.

The County Sheriff's Office in San Bernardino S-O-S'ed Constable one noon and asked him to search for a missing witness in a court trial that was to go before the judge in just two hours. If the witness could not be produced in court at that time, the trial would have to be dismissed for lack of evidence. The Constable quickly located the witness in town and *(Continued on page 64)*



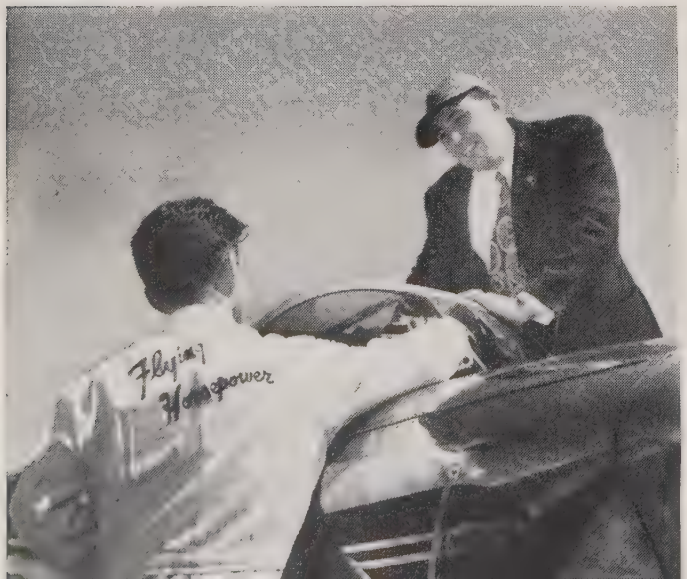
Visiting pilot should be met by attendant and directed to tie-down area, or gas pit

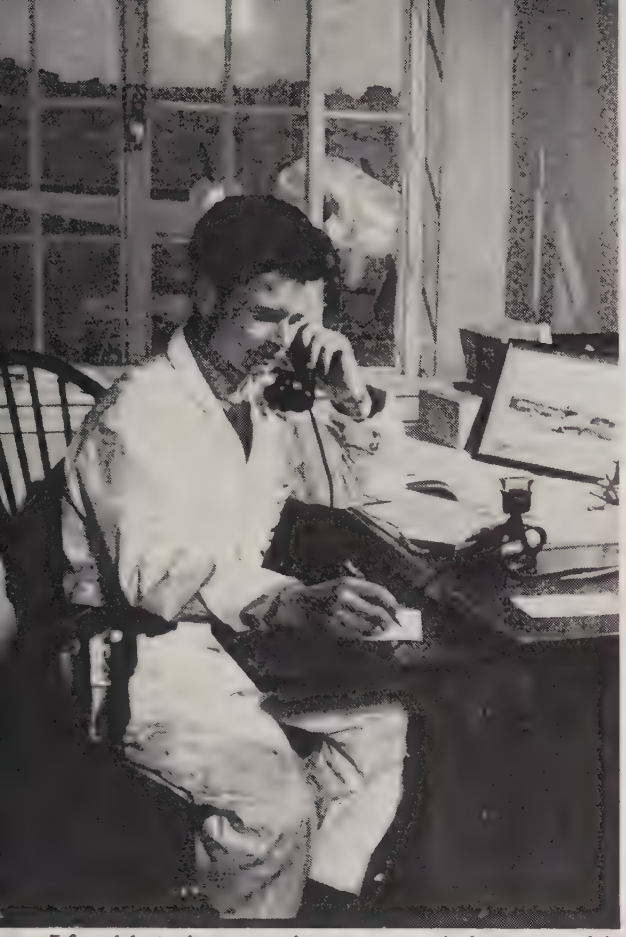
Gassing up should be done promptly, properly. Ask what other service is needed After you have serviced the plane, give an extra in form of cleaning windshield

Super Service

There's sure to be more flying when airport service is real, not just dreamed about

Tires often need more air. If visitor is at field awhile, be sure to check tires





If pilot is staying over-night, get him an hotel reservation and ride into town Before visiting pilot returns to field, clean up inside of ship as well as out

When pilot's departure time rolls around, have his plane on line and ready to go

Such safety precautions as having a fire extinguisher handy is a welcome feature

Good service will bring visitor back as well as other pilots he has talked to

GRUMMAN *Panther*

By JERRY LEICHTER

The plane sparkled for an instant in the sky over Long Island as the noonday sun caught it broadside. The bright light blinked out and was replaced by a dark dot that suddenly became a sleek jet fighter as it lined up with and dropped down to a few feet above the asphalt runway. It blasted past the red brick hangars at over 550 mph and climbed sharply to the clouds in the southeast, slow rolling irreverently on the way.

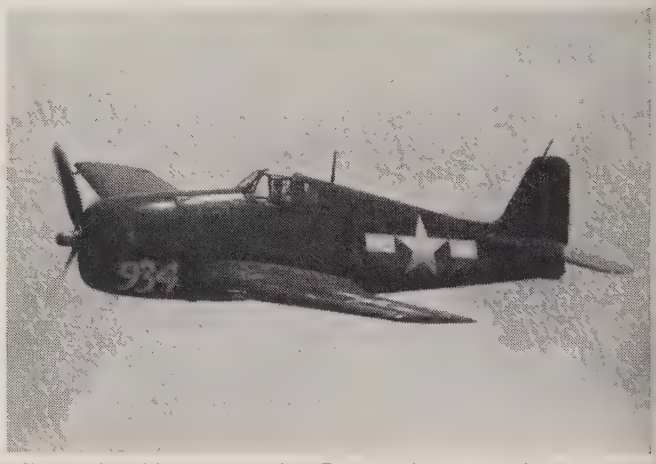
A few moments later after the pilot had announced over an air-ground public address hook-up that he was slowing from 525 mph in a seemingly leisurely turn above the field, the jet loafed into the base leg and then floated down to the runway for a landing at 80 to 85 mph. As the nosewheel touched and stayed on the ground the plane was braked quickly to a smooth stop.

The new carrier-based jet fighter, the Grumman XF9F-2 *Panther*, had joined the Navy with a bang!

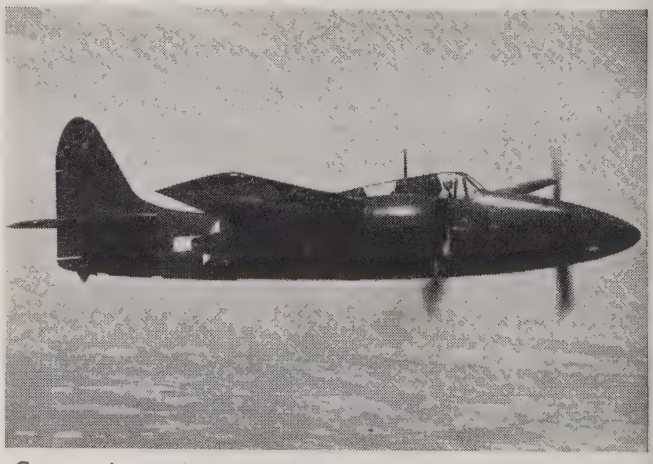
That flight, just four months ago at the Grumman Aircraft Engineering Corporation's plant at Bethpage, L.I., heralded a series of firsts in military aviation. The *Panther*, in addition to being the first jet fighter built by Grumman, prime supplier of Navy combat planes during the war, is the first jet plane with a dual source of engines and the first high-speed airplane with a unique variable camber wing.

Taking the cold facts and figures, the F9F is a mid-wing, all-metal, tricycle-geared, carrier-based fighter plane designed for a better-than-600-mph speed. It is powered by a single Rolls Royce *Nene* turbojet engine, at present the most powerful production jet in the world, delivering the equivalent of 9,000 brake horsepower at top speed.

'Cat series by Grumman began with the F4F, Wildcat, Navy fighter at start of the war



Next in line was the F6F Hellcat (above), one of Navy's top fighters in the Pacific. At close of World War II, Grumman brought out the twin-engine night fighter, F7F

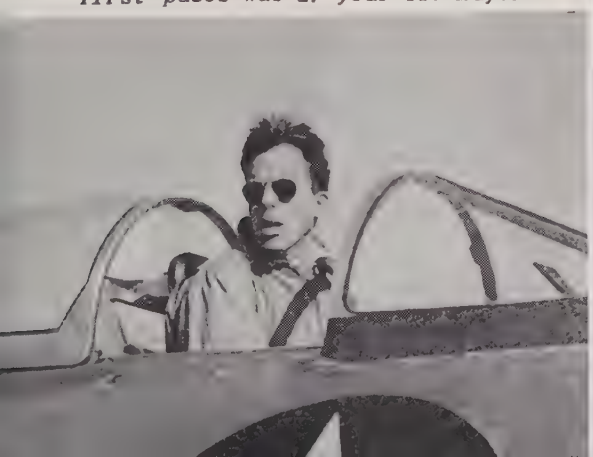


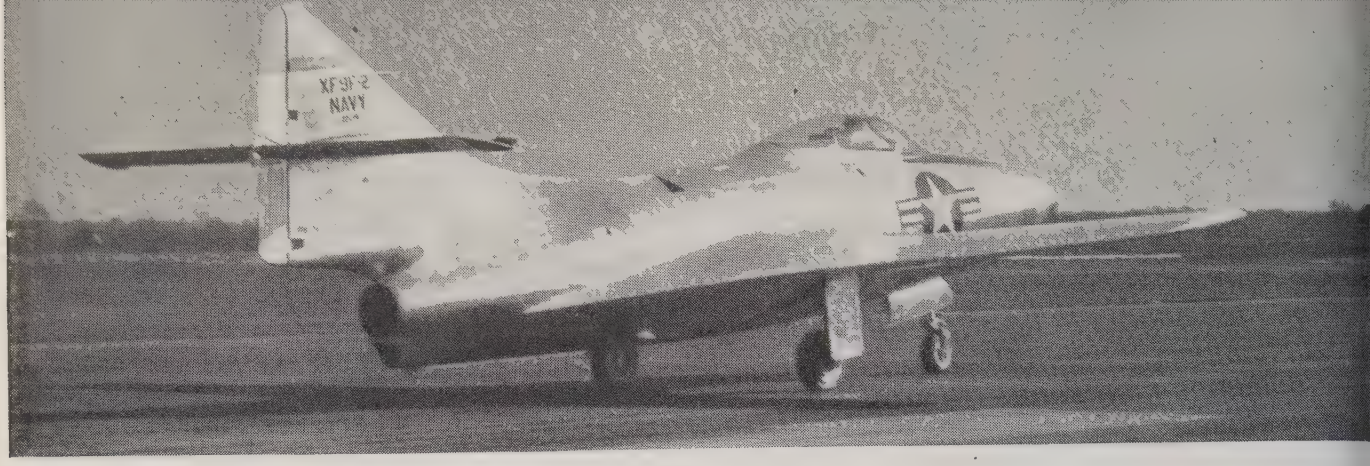
Companion-piece to Tigercat was the F8F, Bearcat, but it came too late for combat

Newest of Gruman's fighters is the F9F, Panther (above), powered by the jet Nene. Note air intakes (below) at F9's wing root

Chief Design Engineer on the F9F was Richard Hutton

Pilot who put Panther through its first paces was 27-year-old Meyer





Tests prove the Navy's 600-mph F9F can get off from deck of a flat-top in less than 600 feet

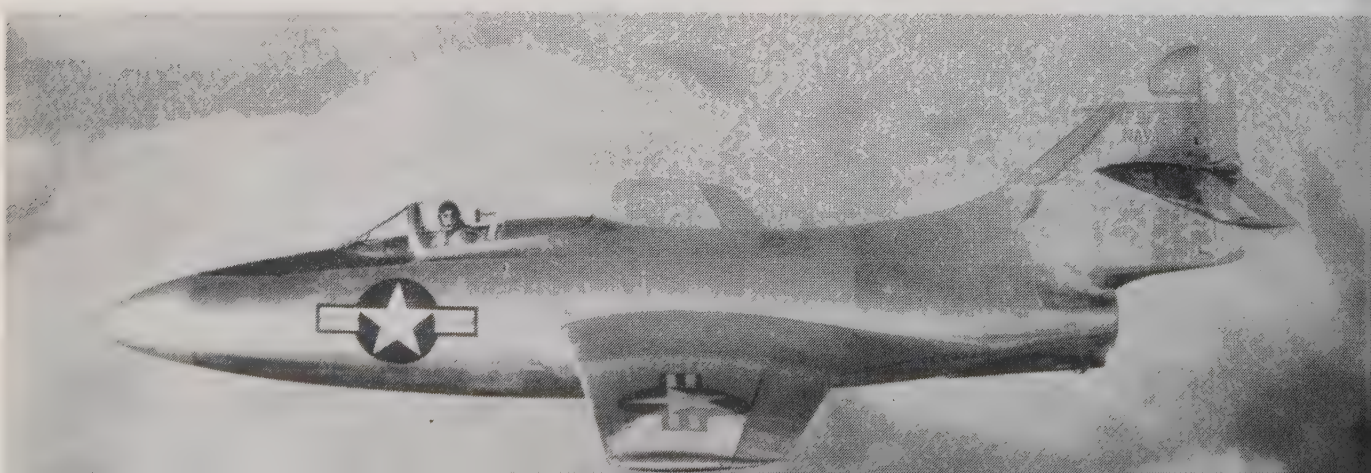
The first *Panther* is powered by a British-built *Nene* as is the third experimental model. The second model has an Allison 400 (J-33) centrifugal flow turbojet, a type similar to the British engine. Production models of the *Panther*, for which Grumman already has begun tooling, will be divided about equally in versions powered by the Allison and by American-built models of the *Nene* being produced under license by the Pratt & Whitney Aircraft Division of United Aircraft, with the added feature that the F9F will be the first modern military plane to have provision for the interchangeable installation in the field of either the Allison or Pratt & Whitney jets.

Performance and dimensions of the plane are still restricted but enough comparison data are known to give some idea of its capabilities. On its first public appearance at Grumman Field, after having only four hours of total flight time, it took off in 500 to 600 feet with a normal load of conventional equipment and with test apparatus making up for the absence of armament. Rate of climb has been announced as being much better than that of the Grumman F8F *Bearcat*, claimed to be the fastest climbing propeller-driven fighter in the world and which has done better than 6,500 fpm. The *Panther's* landing speed is about 5 to 20 mph slower than that announced for other British and American jet fighters.

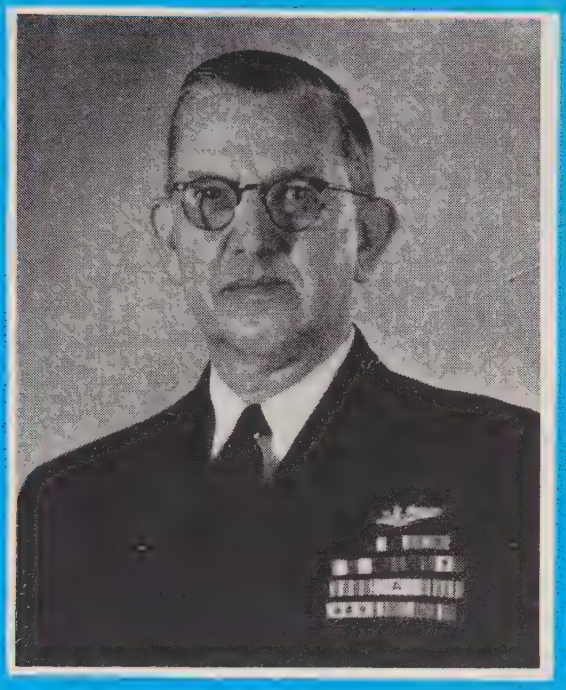
The special feature of the new Grumman jet that provides for its amazing take-off and landing possibilities is described by the Navy as a 'droop snoot,' in which the leading edge of the wing moves in conjunction with the wing flaps, creating what might best be described as a variable camber in the wing, changing it from high-speed to high-lift with one movement of the cockpit control. Much simpler than a Handley-Page type of arrangement, in which a slot is opened in the wing as a section moves forward, the 'droop snoot' in one operation, without making any opening, changes the camber of the airfoil.

During the late war, Grumman produced thousands of top fighter planes for the Navy's carrier forces, in addition to TBF *Avenger* torpedo-bombers. Starting its feline roster with the F4F *Wildcat*, Grumman developed the F6F *Hellcat* and then at the end of the war, too late for actual combat, carried that piston engine family to the highest point of its development with the F8F *Bearcat*. At the same time the *Bearcat* was coming off the production lines in 1945, the Navy and Marine *(Continued on page 53)*

Armament on the Panther will be in nose section, can handle either 50-cals or 20-mm cannon



Air NAVY



THE offensive power of the Navy is measured by the strength of Naval Aviation. The Navy has developed this sea-going air power as its major offensive weapon. Its effectiveness is ably demonstrated by its war record.

In order that the Navy may fulfill its assigned responsibilities as an arm of national security, it must have the required air strength. At present it lacks this strength.

The Navy can operate fighters and attack planes of the highest performance from its carriers. We must have those planes in adequate numbers. The strain on pilots in modern warfare is terrific. We must have replacement groups in order to maintain our offensive power at a high degree.

Amphibious operations require close air support and air cover to insure success. Marine aviation likewise needs modern aircraft and ready replacement groups.

Our Fleet must be guarded against surprise attack. To do this and to control the submarine menace, long-range patrol planes are required to cover the seas.

A pilot's training must enable him to pilot aircraft flying near the speed of sound. Specially designed training planes and a scientific training program are required.

A modern military machine is only as effective as its research and development program. Our efficiency in war is to a large degree dependent on the superiority of our weapons and equipment.

A Navy ready for action is a strong guarantee for peace.

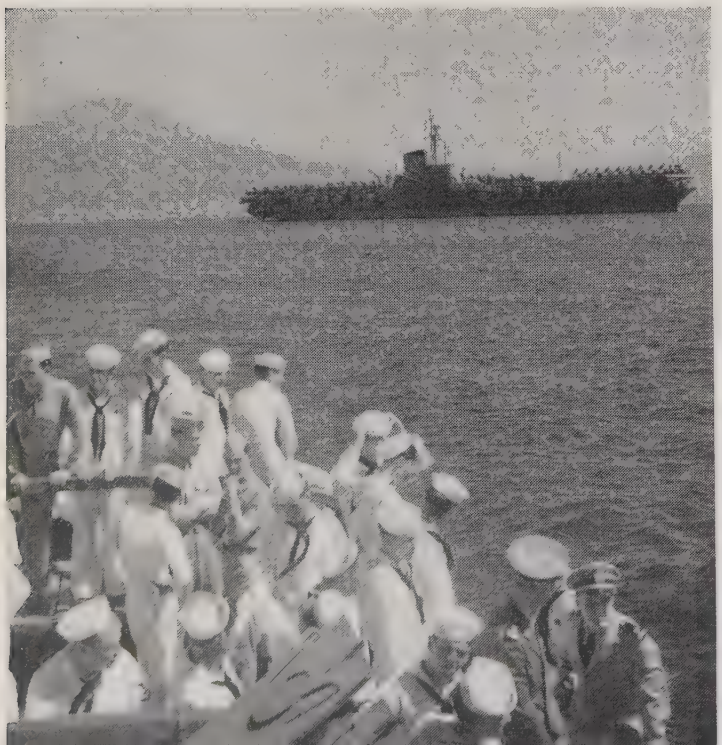
Admiral Louis Denfeld
Chief of NAVAL OPERATIONS

Today's Navy, forged in fires of World War II, is an air Navy. Its capital ship is the aircraft carrier; its chief weapon the airplane that can strike on land or at sea

Why We Need Naval

U.S. Carrier fleet is more than a weapon. Its presence alone is convincing of power

With range of military planes still a problem, carrier can move planes close to foe



Lethal power of Naval Aviation is shown in this photo of what happens when Navy scores

Air Power

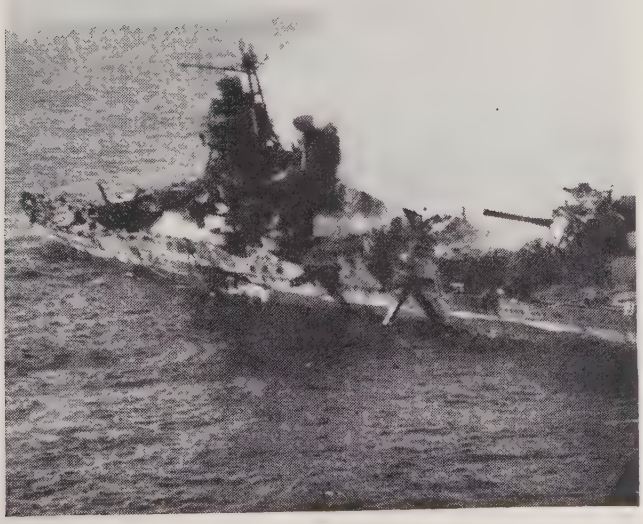
The International stage on which we can't avoid a leading part is a very unstable platform in this age of air power and the atom. On it unfolds the most serious drama in the history of mankind.

United States' performance on this stage is watched by men of many tongues and many faiths throughout the world. In their eyes is dark fear for the future -- fear of war, fear of starvation, fear of the spread of tyrannical government. Our attitude toward these millions of frightened human beings, in other words -- our foreign policy, will determine their destiny. It also will determine ours.

The foreign policy of the United States -- to maintain peace and free the world from fear -- is only as strong as our ability to defend that policy with force against a challenger. Might certainly does not make right, but *right without might has small chance for survival.* The probability of future peace is only as great as our capacity for convincing potential enemies that aggression would unquestionably cause their own destruction. The world's future depends on how convincing we can be.

Congress is charged by the Constitution with providing this necessary strength for the "common defense." Never for a moment can we be unmindful of that responsibility. Our Armed Services Committee is particularly concerned with (*Continued on page 56*)

Knocked out of action by bombs from Navy planes, this Jap cruiser rolled over, sank



By Senator

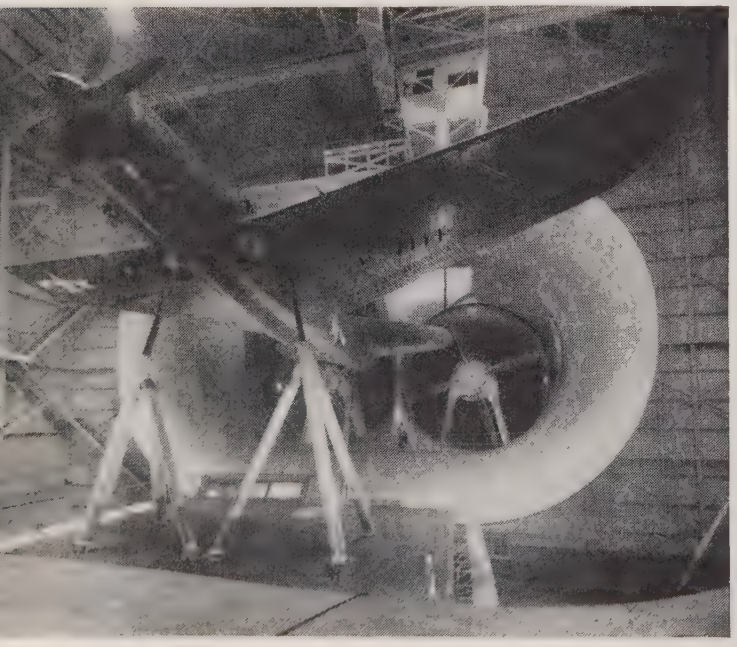
Chan Gurney

Chairman Senate Armed Forces Committee

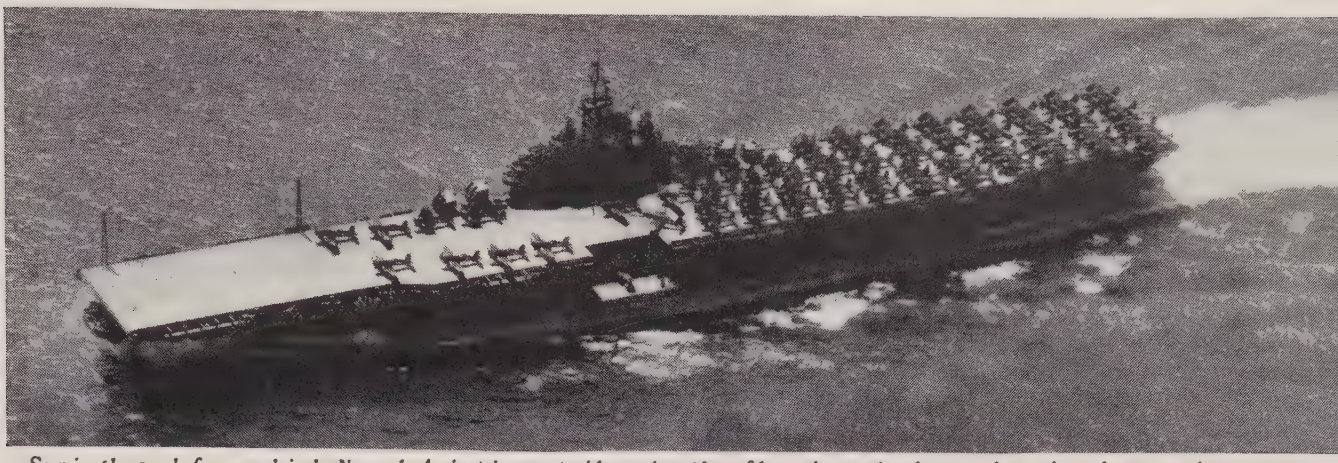
Planes and Plans for the Air Navy

Mobility in Naval air power is based on momentum, mobility in research program

Design of naval aircraft is governed by many factors, one of which is the limited space available on carriers. NACA joined with Navy Research to solve these problems



Ease of handling planes, such as this Avenger, on crowded decks is a necessary factor

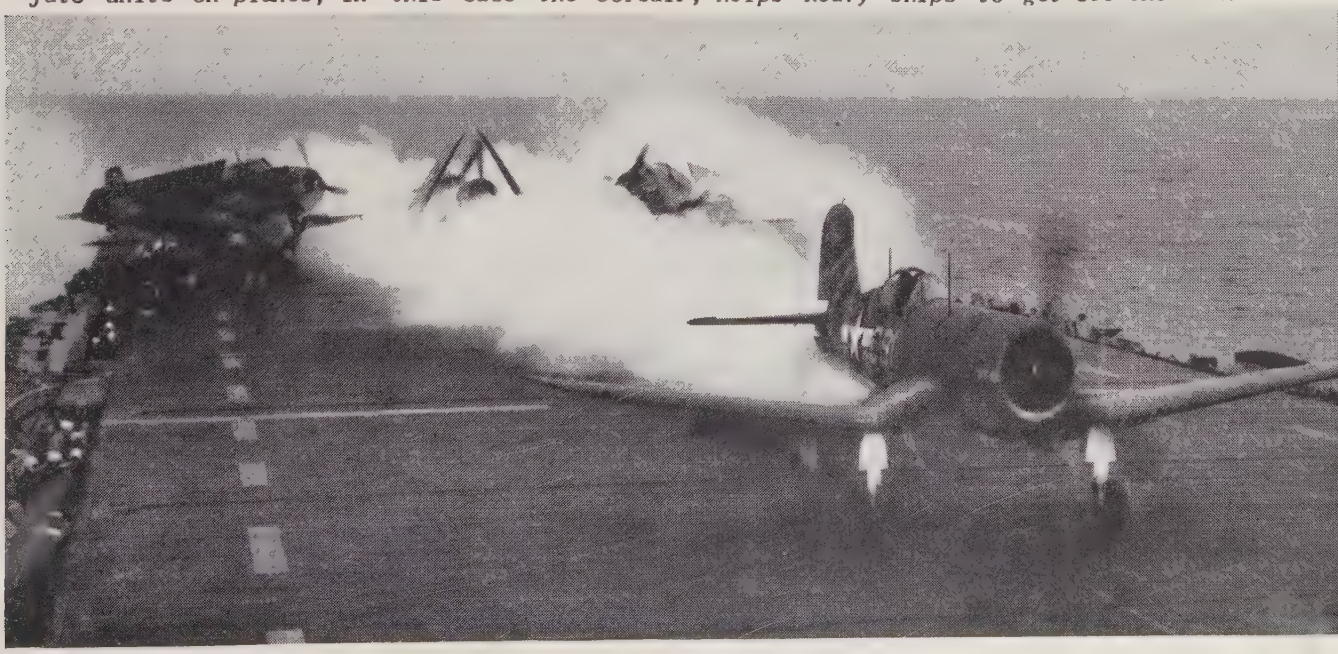


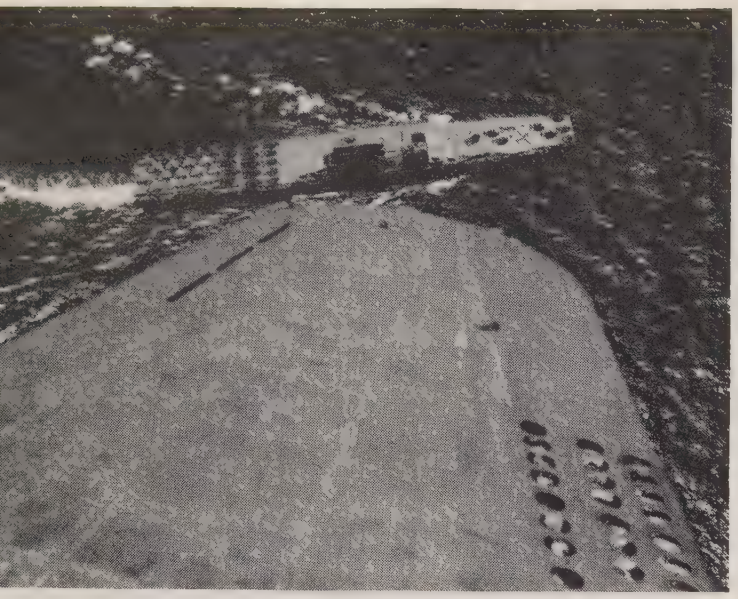
Springboard from which Naval Aviation strikes is the floating air base that is the carrier

By Rear Admiral T. C. Lonquest, USN

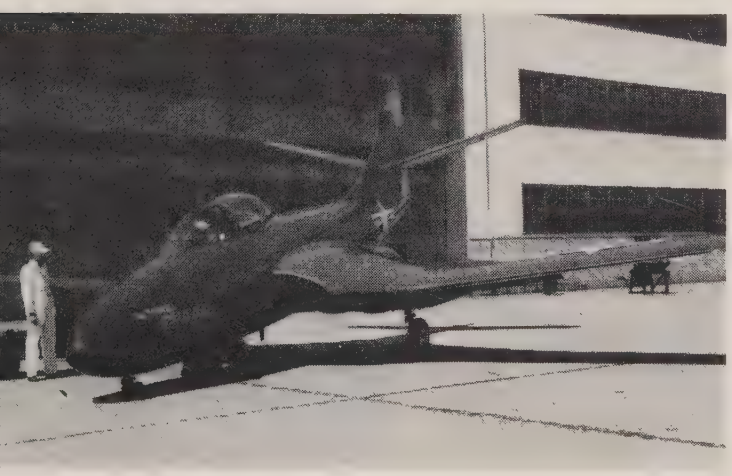
The essence of Naval air power is mobility...and the heart of that mobility -- the spring board from which Naval aviation strikes -- is the aircraft carrier. By the same token, the environmental problem created by air operations from seagoing bases is the spearhead of the Navy's aeronautical research and developmental program. Solution of this problem is the inescapable prerequisite for attainment of the fundamental requirement that a carrier's aircraft, once launched, shall have the technical superiority necessary to accomplish their mission against the opposition to be expected from the shore or sea forces of the defense. Not only must attacking aircraft be able to drive in and deliver an effective attack, but they and the escorting and defending fighters must be able to destroy or turn aside the swarms of interceptors that will rise to oppose them.

Jato units on planes, in this case the Corsair, helps heavy ships to get off the deck





Navy planes must be designed to provide good control at low speeds as well as high



Kneeling landing gear (above) on Banshee facilitates concentration of ships on the flat-top's deck. Another development is ejector seat for escape from jet aircraft

The measure of the merit of an aircraft carrier is its ability to operate the maximum amount of aircraft with maximum facility and dependability. Accordingly, the environmental characteristics of the carrier-based plane must be such that it can be accommodated afloat, not only without sacrifice of its own performance in the air, but also with minimum interference to the overall effectiveness of the carrier. The problem springs, obviously, from the extreme limitations on space aboard a carrier, as contrasted with the generous acres of a shore base. As a result, a fundamental objective in every development project for carrier aircraft is the creation of a design which will permit a scientific and operationally practical concentration of the maximum number of aircraft in a minimum of precious square feet of deck area. Folding wings, "kneeling" landing gear, and comparable expedients are the obvious initial steps. A change in tail surface design may greatly increase the efficiency of utilization of deck areas -- density of deck spot is the technical term -- by permitting the tail of one airplane to slide under the wing of another parked adjacent. Similarly, a change in airplane tail length may permit the critically important elevators of the carrier to transfer two airplanes per trip, instead of one.

Extreme awareness to the significance of key dimensions in the design of carrier aircraft is, however, only the beginning. Beyond that comes a host of other problems before the airplane even starts to roll -- special arrangements for securing, and for handling the aircraft on a pitching deck; for rapid servicing of fuel and of armament; for last-minute line maintenance of a mass of technical material of constantly increasing complexity; for engine run-up, both jet and propeller; and for defueling, all under the pack-jammed conditions of a typical deck spot, where a "dud" airplane, unable to take-off with instant readiness, may momentarily throw the whole team out of its precise timing.

The emphasis on the development of special airplane characteristics to overcome the limitations of space on board a carrier becomes of special importance in the landing and take-off phases of operations at sea. First is the matter of the special aerodynamic features of design and performance which promote short take-offs and which provide the precision (*Continued on page 52*)

U. S. Navy Planes

OPERATIONAL—

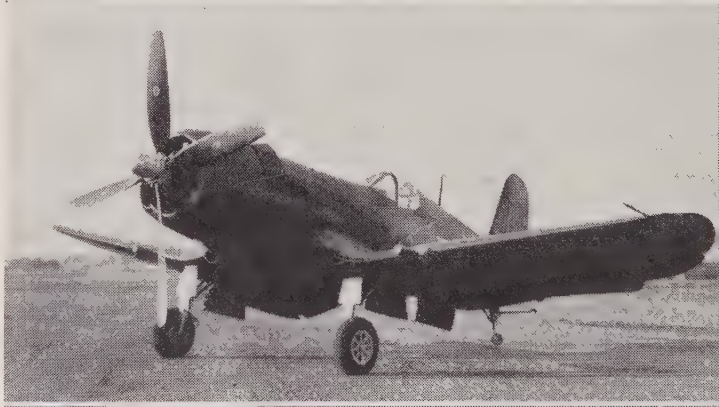
In Production

GRUMMAN F8F. One of the famous *'Cat* series of Navy fighters, the F8F holds Nat'l rate-of-climb record (for planes powered by reciprocating engines) of 10,000 feet in one minute 30 seconds. Powered by 2800-hp Pratt and Whitney engine, *Bearcat* is in 500-mph class. Designed as an interceptor fighter, F8F is now in operation with the fleet as well as from USN land bases.

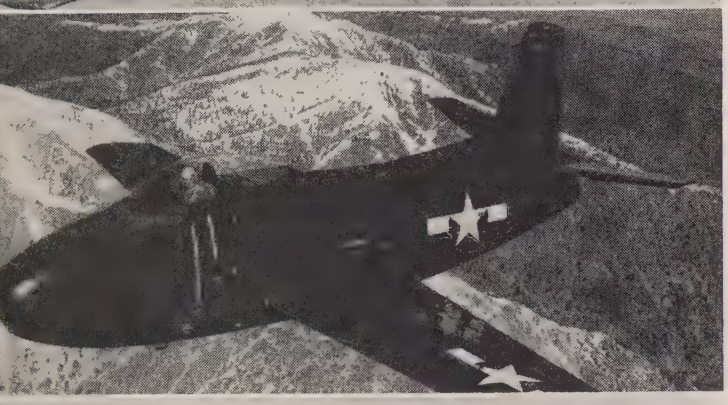
McDONNELL FH-1. First Navy fighter to be powered exclusively by jet, the FH-1 *Phantom* was designed and built for duty aboard Navy's flat-tops. Powered by twin axial-flow turbojets (Westinghouse) built into the wing roots, the *Phantom* has top speed over 500 mph, and a range of about 1000 miles. With full combat load, FH-1 has a total weight of less than 10,000 lbs. A single-seater, the FH-1's armament consists of nose guns, rockets under wings.

CHANCE VOUGHT F4U-5. Newest version of the *Corsair* is this F4U-5, a faster and more maneuverable fighter than earlier models. Although designed as a shipboard fighter, the *Corsair* has proved equally popular as a land-based one. Powered by 2800-hp Pratt and Whitney, the *Corsair* has a top speed of about 500 mph, and a normal cruising range of over 1000 miles. The *Corsair* is armed with six guns, or four cannon, and rockets under the wings.

DOUGLAS AD-1. In the attack bomber class, the *Skyraider* has longer range than other ships of its class. Powered by Wright *Cyclone* 18, the AD-1 can carry 6000-lb load of ammunition over 1500 miles. No data is available as to speed, etc., although it is said to be 50 mph faster than any of its prototypes, and has a ceiling of 25,000 feet. The AD-1 incorporates new fuselage dive brakes, and has facilities for carrying many five-and 12-inch rockets.



LOCKHEED P2V. Called the Neptune, the P2V is a long-range patrol plane carrying crew of seven. Powered by two 2500-hp Wright engines, P2V has top speed over 300 mph and normal range of over 3500 miles. With extra fuel tanks in its bomb bay, it has a ferrying range of 5000 miles. Armament includes nose cannon, wing rockets. Special version of P2V, called Truculent Turtle, set non-stop flight record of 11,250 miles. Ship has short take-off run of 466 yards.



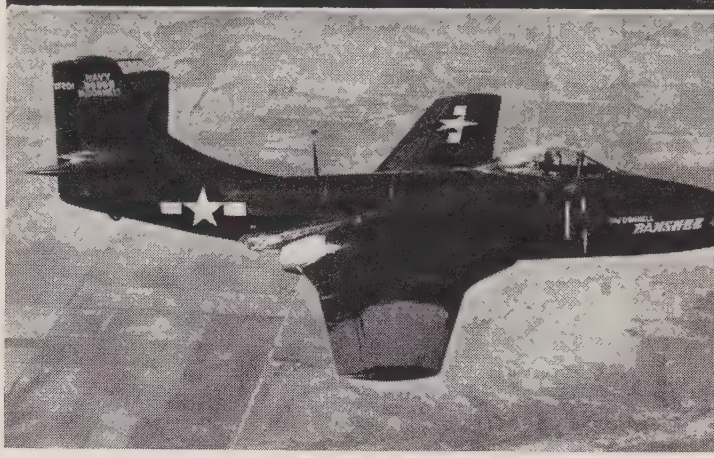
NORTH AMERICAN FJ-1. One of the first all jet fighters to operate from a carrier, a number of FJ-1's recently were delivered to Navy pilots and assigned to USN Fleet Squadrons. A single-seater, the FJ-1 is powered by TG-180 General Electric unit, giving the ship a speed of well over 500 mph. When used on a carrier, take-off is with aid of catapult; from landing field, the FJ-1's take-off is via normal jet power.

MARTIN PBM-5A. Said to be largest amphibian in the world, PBM-5A is Navy transport or patrol bomber. Powered by two 2000-hp Pratt and Whitney engines, the *Mariner* has top speed of over 200 mph, and a range of 3000 miles. As patrol bomber, *Mariner* has accommodations for crew of seven or nine. Internal stowage permits carrying 4000-lb bomb load or depth charges in nacelles beneath wings. Ship is used by Air Sea units.

PIASECKI HRP-1. Known as Rescuer, HRP-1 is largest cargo-passenger rotary wing air craft in production today. Its 600-hp Pratt and Whitney engine turns both fore and aft rotors. The helicopter is 46 feet long and carries crew of two plus eight passengers or six litters. It can ascend vertically with a ton of useful load, and can accelerate to a speed of over 100 mph. Engine is located aft of the main gear.

SIKORSKY HO3S. This helicopter was designed for use as a rescue 'copter, personnel transport or as an observation craft. Powered by 450-hp Pratt and Whitney, the HO3S has cruising speed of 85 mph, maximum of 110 mph. Enclosed compartment in the nose seats two in tandem, but four litters, two on each side of fuselage, can be carried. Auxiliary equipment includes flotation gear, rescue hoists, and extra fuel tanks.

IN PRODUCTION—
Not Operational



CHANCE VOUGHT XF6U-1. Called the *Pirate*, the XF6U-1 will match the performance of the fastest of the land-based jet fighters. Powered by Westinghouse 24-C Yankee jet unit, Pirate is reported to have speed well over 500 mph. A single-seater, this shipboard jet fighter plane employs retractable landing gear. Its air intakes are in leading edge of the wing root. This plane features extensive use of a new sandwich structural material known as Metalite.

McDONNELL F2H-1. Designed and built for aircraft-carrier operations, the F2H-1 *Banshee* is one of the fastest of the Navy's jet fighter planes. Powered by two Westinghouse axial-flow turbojets, the *Banshee* is said to be in the over-600-mph class. Capable of cruising on one or both of its jet engines, the F2H-1 has a rate of climb that exceeds 9000 feet-per-minute. A single seater, the *Banshee* has a take-off weight of more than 14,000 lbs. The Navy's experimental designation of the ship was XF2D-1.

MARTIN AM-1. Formerly known as the BTM-1, the Martin *Mauler* is one of the few fighting planes in production that are powered by reciprocating engines. Designed as a single-seat attack bomber, *Mauler* is powered by 3000-hp Pratt and Whitney engine, giving top speed of over 350 mph and range of over 1700 miles. Its maximum diving speed is over 500 mph, but intermeshing finger-type dive brakes limit dive speed to less than 350 mph. AM-1 carries four cannon in wing, 4000-lb bomb under belly.

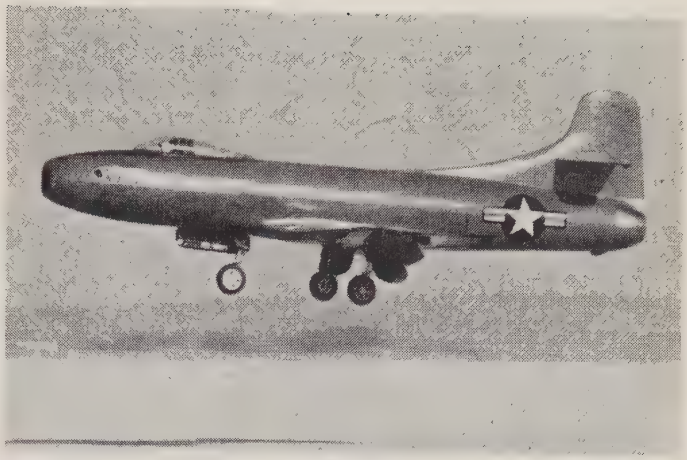
EXPERIMENTAL

McDONNELL XHJD-1. This twin-engine helicopter, developed for the Navy, was first announced in August, 1946. At that time it was the largest and first twin-engine rotary aircraft. Called *Whirlaway*, it is powered by two 450-hp Pratt and Whitney *Wasp Jr.* engines, each mounted halfway out the rotor pylons. The *Whirlaway* has capacity for crew of two and eight or 10 passengers. Its two 40-foot rotor blades, mounted on inclined pylons, turn in opposite directions, thus making a torque rotor unnecessary. XHJD-1 cruises at more than 100 mph, and has a useful load of 3000 lbs.

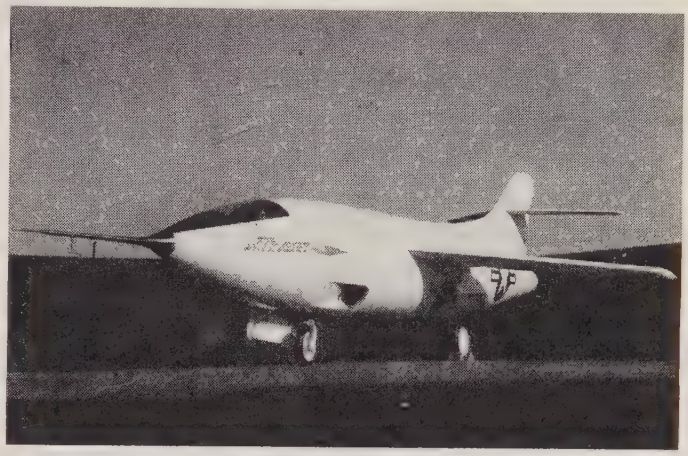
LOCKHEED R-60. Better known as the *Constitution*, the R-60 is largest airplane ever built for the U.S. Navy. A 92-ton ship, the *Constitution* can carry 180 passengers a distance of 6300 miles. Powered by four 3500-hp Pratt and Whitney engines, R-60 has cruising speed of about 240 mph. Two of these ships will be delivered to Navy this year. It has been reported that experimentation is going on with an R-60 powered by gas-turbines (prop jet). The cruising speed of this propjet version might well be in the vicinity of 350 mph. Nothing official has been released yet.

MARTIN P4M-1. Designed as a long-range patrol plane, the P4M-1 *Mercator* combines jet and reciprocating engines. Powered by two 3000-hp Pratt and Whitney *Wasp Major* engines and two Allison J-33 jet units, the *Mercator* has top speed of over 350 mph, and a normal cruising speed of more than 200 mph. Each jet unit develops 4000 lbs of thrust. Maximum range of this ship is said to be more than 3000 miles. The *Mercator* is equipped with very latest radar and radio equipment, thus making it effective patrol plane. The jet units are housed in the rear of the nacelles for the Pratt and Whitney engines, and air intakes are below regular engines cowlings.

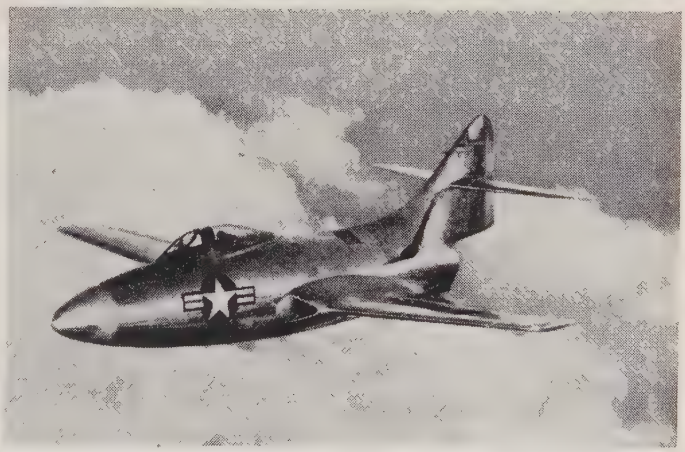
DOUGLAS D-558. This is first of the two experimental planes Douglas built to near speed of sound. This one, the *Skystreak*, is powered by an Allison-built GE jet unit that combines power of all four engines of the B-29. It was flown at a speed of 650 mph by Marine Major Marion Carl out at Muroc last summer. The *Skystreak* has a wing span of 25 feet, is 35 feet long and weighs 10,500 lbs fully loaded. Landing speed is listed at well over 150 mph. The rated hp of this near-the-speed-of-sound airplane has been given unofficially as 8000 hp.



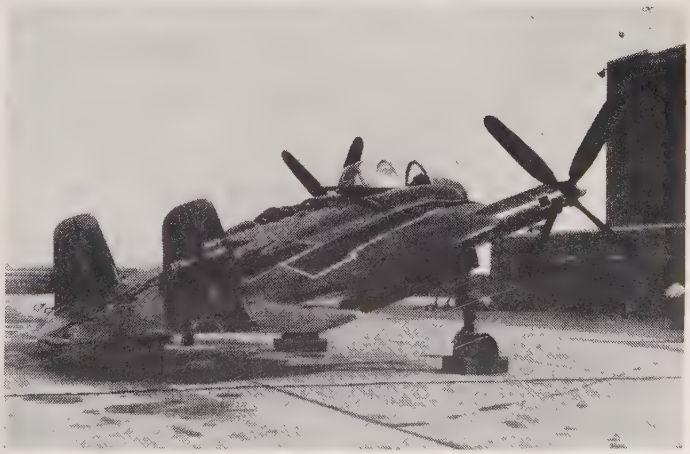
DOUGLAS D-558-2. The second of the two sonic research planes designed and built for the Navy by Douglas is the *Skyrocket*. Powered by a Westinghouse 24-C jet unit and a Reaction Motors' rocket engine, the *Skyrocket* is reported to be much faster than its predecessor. Its elongated, narrow fuselage and needle nose are designed to reduce drag. Pilot is housed completely within polished fuselage, and his cabin is equipped with pressurization, heating, etc. Swept-back wing, tail gives it a V-2 look.



GRUMMAN F9F. Latest addition to the Navy is the *Panther* Designed to operate from an aircraft carrier, the *Panther* is powered by the British-designed but Pratt and Whitney built Rolls Royce *Nene* turbojet, and has a speed reported to be in vicinity of 600 mph. New feature of the ship is its droop snoot, a device that permits forward six inches of the wing's leading edge to bend down. This is nearest approach to changeable camber wing which enables plane to operate as well at low speeds as very high.

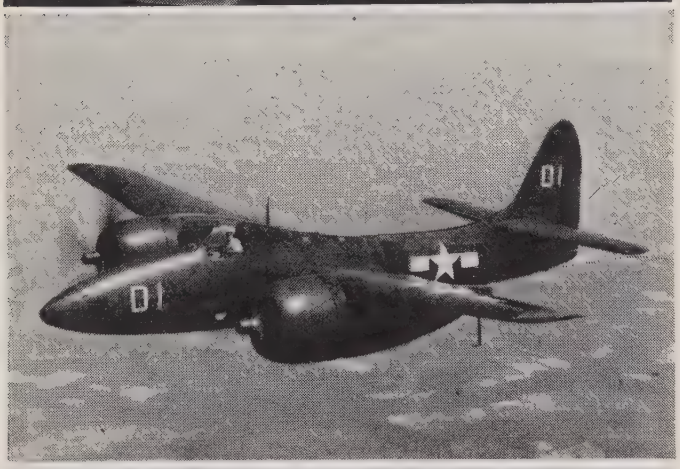


CHANCE VOUGHT XF5U-1. This flying wing type plane was designed to fly at extremely low speeds (20 mph) and at reasonably high speed (460 mph) as well. It is powered by two Pratt and Whitney R-2800 engines and employs water-injection. If powered by gas turbines, officials state, the XF5U should have a speed range of from 0 (hovering) to over 500 mph. First tests of this design were made with a full-sized, low-powered, lightweight flying model that was given the designation of V-173.

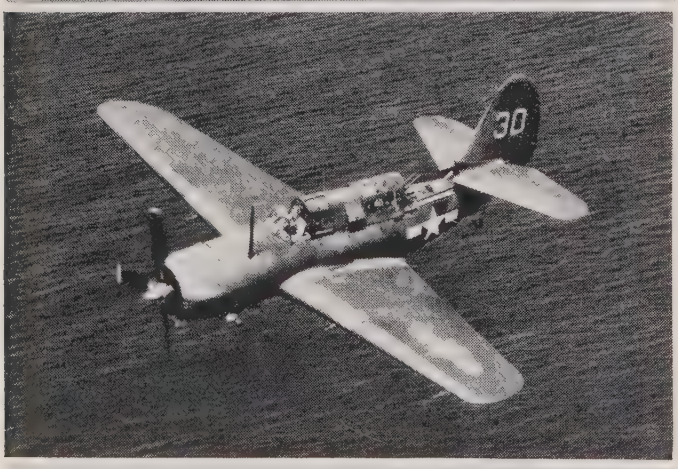


OPERATIONAL—

GRUMMAN F6F Famed World War II Navy fighter, the Hellcat is still in operational use, although not in production anymore. Powered by 2000-hp Pratt and Whitney engine, F6F has top speed of 370 mph and a range of 1040 miles. Latest version delivered to the Navy was the F6F-5, a faster and more maneuverable ship than the earlier models. Armament of F6F consists of six machine guns, three in each wing. It also carries two 1000-lb bombs under the center section of its fuselage.



GRUMMAN F7F. The *Tigercat* was one of last fighters to be delivered to the Navy near end of the war. There were six different versions: the prototype, XF7F; production version, F7F-IN; F7F-2N, a two-place night fighter; F7F-3, a single-seater day fighter; F7F-3N, a two-place night fighter with radar in nose, redesigned fin and rudder; and the F7F-4N, a development of the -3N but with redesigned nose. All of these models were powered by 2800-hp Pratt and Whitney engines; were basically two-seaters.



CURTISS SB2C. Another operational Navy plane that is no longer in production is the well-known *Helldiver*. Designed and built as a dive bomber, the SB2C carries 20-mm cannon as well as a bomb load. Powered by Wright *Cyclone* engine, the two-place SB2C has a speed over 250 mph, normal range of more than 1000 miles. Latest version of the *Helldiver* has a four-bladed prop instead of a three-bladed. The *Helldivers* operate from carriers, have folding wings to facilitate plane stowage.

GRUMMAN TBF. In the torpedo bomber class, the Grumman designed and built *Avenger* was an outstanding member of the Navy's fighting team in the Pacific. Like other planes shown on these two pages, it is no longer in production. Powered by 2600-hp Wright engine, the TBF's top speed is over 250 mph and its range is more than 1000 miles. It carries a crew of two, sometimes three, and is armed with machine guns. It also carries aerial torpedo, bombs or depth charges. Note radome on the right wing in photo.

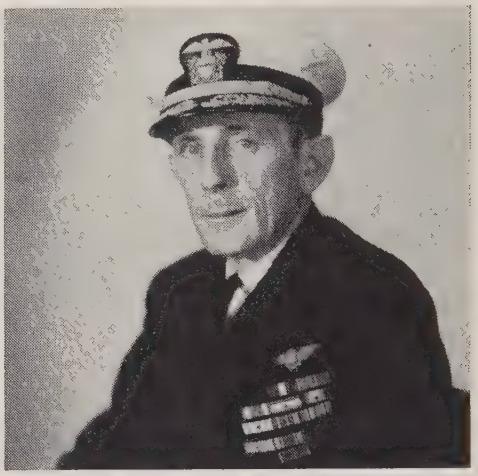
CONVAIR PB4Y-2. A familiar sight in the Pacific skies during World War II, the *Privateer* still is being used to some extent by the Navy. The PB4Y actually was Navy's version of the Army Air Forces' *Liberator* bomber. A long-range over-sea bomber reconnaissance version of the *Liberator*, the PB-4Y *Privateer* is powered by four 1200-hp Pratt and Whitney engines, giving it top speed of over 250 mph, cruising speed of more than 200 mph and a range of more than 3000 miles. Armed on all sides with machine gun turrets, the *Privateer* also carries a 6000-lb bomb load. Accommodations are provided for a crew of 11. A few *Privateers* are now equipped for meteorological research duties, are in use at Navy bases.

MARTIN PBM-3. Called the *Mariner*, same as PBM-5A (see Operation, in Production), this version is used today on Air/Sea Rescue duty with the Coast Guard, and as a transport. Powered by two Wright R-2600 engines, the *Mariner* cruises at better than 150 mph and has a range of more than 1500 miles. It carries an all-up weight of 8000 lbs of cargo or freight, or 40 passengers. As an Air/Sea Rescue plane, the *Mariner* is equipped with hospital facilities and is painted white. It carries a crew of seven. Armament has been removed, but the radar equipment is intact. The Naval transport versions of this ship occasionally can be seen at Navy Air Bases throughout the U.S. It will soon be replaced by newer ships.

CHANCE VOUGHT F4U-4. Another hold-over from the war in the Pacific, this model *Corsair* still is in active operation, but no longer in production. Production model today is the F4U-5. The F4U-4 is powered by 2100-hp Pratt and Whitney engine employing water injection. It has a top speed of 425 mph, cruises at close to 400 mph, and has a normal cruising range of 1120 miles. Armament on the F4U-4 includes six five-inch guns or four 20-mm cannon. Racks below the wings will hold eight five-inch rockets, or two 1000-or 1600-lb bombs beneath the fuselage. Pilot's cockpit has bullet-resisting windscreen, armour plate. All of this model *Corsair* eventually will be replaced by the faster, now-in-production F4U-5 *Corsair*.

Guided MISSILES

By Admiral D. V. Gallery



The Navy of today is sea-going air power. It can roam all over the world and launch surprise attacks from any place accessible to the high seas. The operating range of its carrier planes is equal to the normal range of the plane itself plus the cruising radius of the ship, which is measured in thousands of miles.

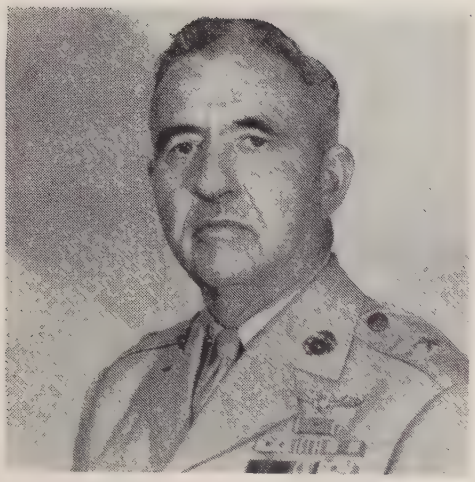
This same basic concept is the most important single factor in the Navy's plans for developing guided missiles. Every ship in the Navy is a potential guided missile launching site in a remote spot far on the other side of the ocean. These sites are available to us without going through the bloody business of fighting our way ashore to get them. This fact gives the United States a tremendous advantage over any non-naval power, an advantage which can well be decisive. Guided missiles of the "push-button warfare" type with transoceanic range and atomic warheads are many years in the future. But comparatively short-range weapons, such as the German V-2, are here now. Any such weapon which the United States possesses, or develops, immediately becomes a transoceanic weapon as soon as we are able to launch it from a ship. That was the reason why the Navy took a V-2 rocket to sea and fired it from the *USS Midway* last September. Until the era of push-button warfare" arrives, the Navy stands ready to take any missile and endow it with 5,000 miles extra range by firing it from a ship, submarine or naval aircraft. Ask any missile designer how many tons of weight he needs for the first 5,000 miles of range and you will appreciate how much easier this makes the job for our missile builders than it is for their foreign competitors.

This idea of extending the range of weapons by mounting them on ships is as old as the Navy. In the days of the Revolutionary War the maximum range of a smooth bore muzzle loader was two miles. But with smooth bore muzzle loaders mounted on a ship, John Paul Jones was able to bombard the coast of England at a range of 2,500 miles -- measured from our shore line. The B-25, used on Doolittle's raid on Tokyo, had a maximum range out and back of 1,200 miles. But Doolittle's planes, embarked on the *USS Hornet*, left United States territory at San Francisco, bombed Tokyo and landed in China 6,000 miles from their point of departure.

In the guided-missile era the Navy continues to exploit this unique advantage which is inherent in mobile launching sites

Marine AVIATION

By General Field Harris



Marine Aviation is that part of the Marine fighting team which made it necessary to change the words of the Marine Hymn. Before World War II that song used to have a verse which read, "We fight our country's battles on the land and on the sea." Marine participation in World War II had barely gotten to Guadalcanal when it became apparent to all the world that Marines were also fighting in the air. But these Marine airmen were not fighting a war of their own. They were conducting the air phase of an amphibious operation. They were an essential component of a carefully balanced, fast-moving striking force.

The test to determine that a task is suitable for Marine aviation in an amphibious operation is to ascertain whether the action will aid Marines fighting on the ground. The assignments can be divided into three general types. The first is support of ground troops by attacking enemy installations with machine-gun fire, bombs and rockets, especially during that critical time in a landing when ship's gunfire must lift from the beach and our Marine artillery is not yet ashore. This aerial artillery fire and reconnaissance must continue until enemy resistance ceases. At the same time Marine aviation is carrying on the second type of mission -- aerial combat. This is the activity that made the headlines in the South Pacific and Okinawa where hundreds of Japanese aircraft were blasted from the skies by Marine aviators. This support protects the landing force from enemy aerial attack, keeps enemy bombs from vital supplies on the beachhead and keeps the landing fields ashore safe for aircraft operation. In addition to the shooting aviators, Marine aviation has squadrons of utility aircraft. In the last war they made few headlines but these aircraft brought gasoline to fighter planes when it could be supplied in no other way, dropped food to isolated units, carried letters to combat-weary Marines and hauled the wounded to places where they could be evacuated by regular transport service.

From the multiplicity of missions that Marine aviators are required to perform it would seem that many specialized types of aircraft and specially trained personnel would be required. But Marine aviation is small. Its present strength is but a fraction of the number of Marines who maintained aircraft and flew during World War II. Marines make up for this deficiency in numbers by versatility.

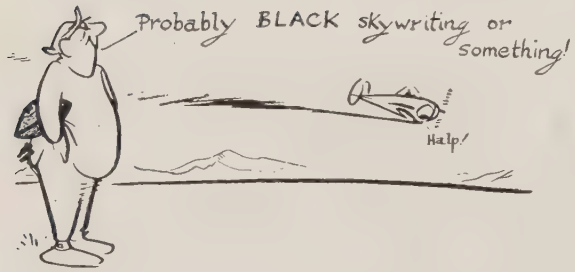
The Marine aviator is trained in all types of Marine aircraft. He maneuvers and works with the ground Marines so that he knows their problems.

The modern Navy fighter aircraft, developed for carrier use, is the answer to the Marine aviator's prayer for a versatile machine for the combat part of his work. With it he has the performance to handle enemy aircraft and the fire power to destroy ground installations. He can supplement Naval aviation when the situation requires. He is able to operate from land bases or from carriers.

Because of this judicious combination of Navy flight training and equipment coupled with Marine *espirit de corps* and versatility, we find Marine aviation ready to carry out the primary mission assigned by the National Security Act of 1947, namely the support of ground-fighting Marines in the conduct of amphibious operations -- from the land -- from the sea -- *in* the air.

DILBERT

By S. H. Warner and Robert C. Osborn



MECHS CARRY THE BALL--A modern engine is an intricate and efficient mechanism, but it can't protect itself against negligence. The effects of careless maintenance are apt to snowball into tragedy.

Take for instance, the recent case of a forced landing in which a very expensive airplane was washed out for the lack of a ha' penny worth of safety wire -- and of course, a dependable mech to put it in.

What happened was that this mech failed to tighten the oil-drain plug and safety wire it, after check. The results followed normal expectancy. Vibration shook the plug loose in the air, the oil drained out, and the engine went kaput. They were over bad terrain at the time, and the pilot was lucky to be able to walk away from this one.

The best engine in the world and the most competent pilot aren't a match against this kind of sabotage. No sir! Until they invent an engine that can yell when something is wrong, the mechs will still carry the ball.

ETERNAL VIGILANCE--Aviation is no place for a fatalist. That's the guy who takes the attitude, "Well, if I'm going to get it, I'm going to get it -- so why bother?"

If you watch these Dilberts, you will see that there isn't one of them who isn't a lazy so-and-so. They are just putting out cover-up talk, to keep from having to expend a little energy. They usually are careless and inattentive, too, and that is the basic cause of a large percentage of accidents. Here are a few recent examples:

Case A. This pilot wrecked his plane in a forced landing when he lost suction at low altitude. He had a full tank of gas, but he wasn't "gas conscious", and failed to shift in time.

Case B. This Pilot cracked up short of the field on his landing approach. He had been using his mixture control while flying at 5,000 feet, and neglected to return it to full rich when he came down. He had a perfectly good engine -- it just quit running for lack of gas. (*Continued on page 51*)

Don't stretch a glide

Godfrey

(Continued from page 21)

tions. No direct reply was received; "That voice sounds mighty familiar," he heard someone in the tower say. Repeating his request, Godfrey drew only the reiteration, "Yep, -- that voice sure does sound familiar."

Godfrey immediately warmed to the occasion. Getting up his best commercial dander, he began "BC Headache Powders...BC...BC...Have you a dull, loggy, feeling? -- etc," followed by a two-minute discourse on the thirst-quenching properties of Pepsi-Cola. When Godfrey'd finished, the landing instructions quickly came through before Godfrey went commercial again, and down he set at the Westchester Airport for the first time.

But it wasn't the last time. Godfrey seems to have taken a great liking to the place -- which is readily understandable. It's located in about the most beautiful flying territory in the east, and often, on those week-ends when he doesn't go home, you'll find him hopping over there from Teterboro just for the flight, and perhaps a hamburger and coffee with his good friend Frank Ward.

He hears personal notes from other control towers, too. When leaving Teterboro, the redheaded operator of NC 8787 H is sometimes hit with the terse inquiry, "Hey Godfrey,--how're your birds?", which we can easily imagine him answering with enthusiasm, for his concern about his feathered aerial buddies is common knowledge to any Godfrey fan.

Much of Godfrey's flying is done in commuting between New York and his home on Catoctin Ridge, not far from the Leesburg Airport where he lands in Virginia. Here on Catoctin Ridge he has an 800-acre farm which, if we are to take him seriously, is in the most inaccessible spot in the country.

"To reach my place," he told his listeners one day, "you take a Leesburg bus to the end of the line. Then hire a pack-mule and go as far as he'll take you. Next comes a few miles by water-buffalo; and after that it's hand-over-hand through the underbrush."

But if that exaggeration was designed for a laugh, it was founded in fact none-the-less. The place is really rugged and rolling -- so much so as to have completely eliminated the possibility of Godfrey's laying down a landing strip on his property. But nature made compensations. She filled the place with brooks and streams; and filled the brooks and streams with trout and bass, and the Great-Redheaded-Father-of-All-Disc-Jockeys hasn't far to go for his fishing.

It is Godfrey's established custom to return to his farm every other Tuesday and spend the following four or five days with his family. He permits nothing to interfere with this--not even his broadcasts, which then go on from the farm. On such trips home, he usually flies. But his little *Navion* hasn't the instrument panel of a DC-6, and a scowling weatherman once in a while makes him hit the rails for his homeward journey.

If, however, the day of his scheduled return is fit for flying, a telephone call goes through to New York, and soon the *Navion* is headed down to Virginia. At it's controls is Godfrey's good friend, Jim Taylor, a likeable young chap whose five years in the Naval air service have included testing, instructing and combat flying -- and the same young man that gave Godfrey his demonstration ride in the *Navion*. Together, they fly back to Teterboro Air Terminal where the master salesman for Chesterfield, Lipton, and a few dozen other sponsors, keeps his ship hangared at the Mallard Air Service building. From here it is but 45 minutes to the CBS studios in New York City.

Years ago, when Arthur Godfrey first began his rise in commercial radio, his love of flying naturally led him to the airlines when travel was necessary. His first flight via airliner, he recalls, was back about 14 or 15 years ago. It was from New York to Miami in a Curtiss Condor, a big twin-engined monstrosity with enough wing area to fly the Empire State Building. But it was the last word in air transportation at that time; and a flight from New York to Miami was considered a long one.

Since then he has traveled thousands of miles this quick, comfortable way. And it was in May of 1947 that Godfrey, Eddie Rickenbacker, and a host of press representatives flew from Burbank to New York aboard the first 'Connie' delivered to Eastern Air Lines. On this trip Pilot Dick Merrill broke the transcontinental speed record for commercial airliners.

Near the end of the war, the rugged-voiced Arthur had the longest flight of his many years of flying. It was in an Army B-24, and he flew from the States to Saipan, arriving in time to witness the ground-work preliminaries for the B-29 raids on Japan.

If the helicopter be something new and untried for many an old-timer, it's not that way with Godfrey. He hasn't yet learned to fly a 'copter himself, but he's been getting around in them a bit never-the-less. One day he and Jimmy Viner, Chief Pilot for Sikorsky Aircraft, were rotoring their way down through Maryland in a Sikorsky S-51 when a thunderstorm saddled itself across their course.

"He landed on a carrier once and can't forget it!"

The rain started in torrents as the boys decided to sit down someplace and wait it out. Very conveniently the Laurel Race Track presented itself below. The place appeared to be deserted, and Viner let the egg-beater down into the center of the racing park. But upon landing the boys quickly discovered that it wasn't deserted at all -- the racing fans were jammed in the grandstand to escape the rain. Moreover, there was still another race to be run, and the rotor-borne orphans of the storm were told to sit quietly until it was over.

Now here was opportunity not to be overlooked by you know who! Godfrey got a scratch-sheet, made a selection in the last heat, and when the sun shown again the boys pulled up out of Laurel a few dollars ahead for the experience.

For a fellow who has done so much flying in the past, Godfrey's enthusiasm for new experiences in the air is remarkable. This was brought home very clearly to the author during a telephone conversation with the radio artist the Sunday before last Christmas. At that time he spoke of his plans to fly home for the Christmas holidays in a friend's Grumman *Mallard* on the coming Tuesday afternoon. He eagerly looked forward to the new experience of flying this beautiful big ship, and it was very apparent in the manner he spoke.

But Tuesday dawned amidst a snowstorm and a visibility of zero-minus. Even the birds were sitting it out. And on his early morning program Godfrey could be heard glumly intoning, "The time is now 7:07 AM; the barometer is falling, and the weather is 'pew' -- and it's gonna be 'pew' all day -- just 'cause I wanna fly." Nor did the listeners on his Chesterfield program a few hours later miss his disappointment. Thought I was going home by Grumman," he grumbled, "...now I go by Pullman." A few weeks later, however, he caught up with it. Leaving the 23rd St. Skyport, he flew the *Mallard* to Virginia and spent a good part of the next day's broadcast raving about how much he enjoyed it.

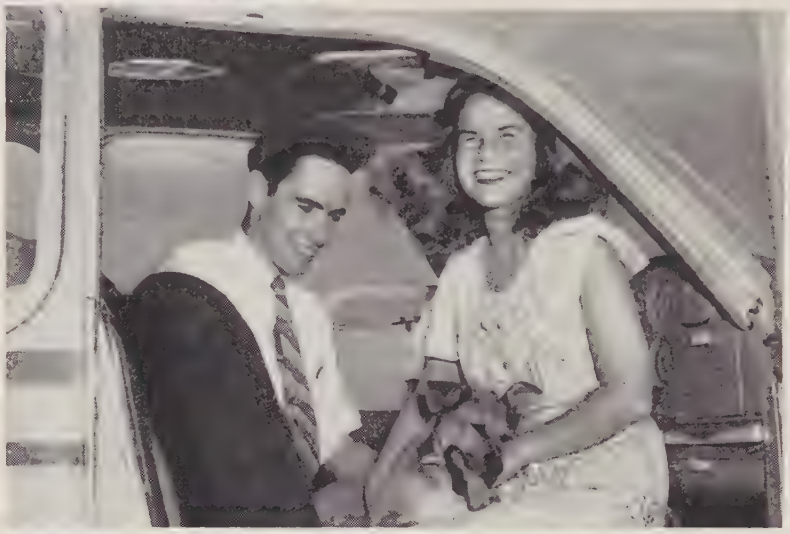
But no sensible person's love of *anything* goes unrestricted. Recently, Arthur Godfrey was offered an opportunity to break in flying a P-80 jet job. Graciously he declined, and choosing the words most fitting his character, said "I don't want her, you can have her, she's too *fast* for me." And asserting that he might take a ride in one with two seats, he let it be known that there was no wish within him to pilot something that travels at 600 mph.

Godfrey doesn't like to fly alone, and more often than not, he doesn't. "It's so beautiful up there," he observes, "that you want to share it with someone." Most pilots feel the same way. And of his many flying companions, Mrs. Godfrey is the most consistant. Although not a pilot herself, she has spent many pleasant hours in the skies with her famous husband.

Arthur Godfrey's work is in the air-waves; his recreation is in the skyways. But had he chosen the latter as his work, he probably would have been quite successful at that, too. For one of the most sincere things about him is his love of aviation. "Everybody," says the ruddy baritone, "should learn to fly."

AIR MARKING that is clearly visible from the air is welcome sight to flyers in the Boston area. These 10-foot yellow and black checkers and 20-foot yellow letters were installed by Air Markings Inc., of Boston, Mass., on the 180-foot hangar at the Ames Airport, South Boston, Mass. The marker is one of CAA-approved.

NEWLYWEDS Mr. and Mrs. Wallace Barnes drove to Fairbanks, Alaska, on their honeymoon. When car broke down, they bought a Beech Bonanza and an Alaskan Husky, and took skyways home.



AIR SHOW stunt that is popular with crowds is this landing of Cub on a platform on a car. Grady Thrasher is at controls of plane as it lands on the "World's Smallest Airport".

THE MAMMY MAN, Al Jolson, one of the world's greatest entertainers, recently decided to join the ranks of private pilots. With his first few lessons already logged in this Cessna 140, the 59-year-old singing star of Kraft Music Hall is aiming for that private ticket and hours of fun in the air as well as on air.

Caterpillar

(*Continued from page 23*)

Staring at those pictures and recalling the grim events leading up to Lieutenant Harris' adventure, the trio concluded that this incident on October 20, 1922, marked a new day in man's conquest of the air.

Within a month after Lieutenant Harris had made his life-saving jump, Lieutenant Frank B. Tyndall was forced to abandon a disabled plane over Seattle, Washington. In the interim between those two jumps -- October 20 and November 11, 1922 -- those two newspapermen and the chute engineer had contrived something bold and unique.

Maurice Hutton, aviation editor, and Verne Timmerman, photographer, both of the Dayton (Ohio) Herald, and Milton H. St. Clair, of McCook Field, conceived a club whose members were taken in "quite by accident." Of course, it had to be a lucky accident, and you had to jump with a parachute because that was (and still is) the only aerial lifesaver known.

By including all self-saved men and women, the founders conceded that neither time, nor place, nor sex, age, religion, nationality, date of birth, or condition of servitude mattered. This means that all current Caterpillar lists are incomplete. In effect, the society of the self-saved may go way back to the time of the Polish balloonist Jordaki Kuparento who, on July 24, 1808, is alleged to have lashed himself to a life-saving parachute when the balloon fabric caught fire. Although Kuparento may well be Caterpillar No. 1, his jump cannot be verified.

Today, the society of the self-saved numbers well over 20,000 most of whom were initiated in the various theaters of World War II. By rough estimate, about 18,000 American members entered the ranks after hostilities began.

Since the public as well as many men who were initiated "by accident" during the war, are unfamiliar with the origin and background of the Caterpillar Club, it's appropriate to recall certain obscure events and circumstances which gave it fame the world over.

The following statement was written by Milton H. St. Clair, co-founder, at the author's request about 17 years ago:

"....two members of the Parachute Unit, Mr. Mumma and I, collected photographs of Lieutenant Harris at the wreck of his plane, a photograph of the chute hanging over a grape arbor and the 'P' number, which was the only part of the airplane left.

"These photographs and souvenirs were used to decorate part of a wall in the old equipment laboratory at McCook Field. This display received a good deal of attention from the visiting public, and especially from Timmerman and Hutton, of the Daily 'Herald' staff.

"Discussion arose as to the probable outcome of this one jump, and with a realization that many more were to follow, Timmerman suggested that a club be formed to embrace those intrepid airmen. Suggestions for appropriate names were offered.

"We decided that 'Sky Hookers' and 'Crawlers' were weak and ineffective.

"Not long after our conversation, I received literature about the Caterpillar Tractor Company from a relative, showing a design for their advertisements, that is, a wavy streak with 'Caterpillar' written across its face.

"I immediately got in touch with Timmerman and Hutton, and suggested to them that the organization be called 'Caterpillar Club' for several reasons, namely: The parachute main sail and lines were woven from the finest silk. The lowly worm spins a cocoon, crawls out and flies away from certain death. A better example of what a pilot or passenger should do in the case of an uncontrollable plane could not have better figurative depiction. Hutton and Timmerman gave enthusiastic support to this name, and from that day on these heroes are known simply as 'Caterpillars'."

Soon after its founding the Caterpillar Club became a *cause celebre* for a small group of devotees who recognized a debt of gratitude to the men who had worked and struggled in virtual anonymity at McCook Field in order to develop a dependable life-saver. They were Major Hoffman, Guy M. Ball, Leslie Irvin, Milton H. St. Clair, Floyd Smith, Glenn Martin, James M. Russell, A. Leo Stevens, and a few others.

As I understand it, the Caterpillar Club memorializes the labor and sacrifice of those engineers, test-jumpers and inventors as much as it recognizes the valor of Caterpillars themselves. It also memorializes those who plunged to death without parachutes -- thus provoking the Army to issue its ironclad regulation which makes the wearing of chutes obligatory during flight.

In the early days, each new member was received with a little blast of fanfare by the press boys, who followed the counting of Major Falk Harmel, editor of the Army Air Corps News Letter, in Washington, and Bob Fitzgerald, civilian at Wright Field, Dayton. At the end of 1922, the Caterpillar count stood at five; at the end of 1924, it was 15; at the end of 1925, 27; at the end of 1926, 40; at the end of 1927, 78; at the end of 1928, 120; and in the beginning of 1930, the membership totaled about 210.

Once you initiated yourself, you applied for membership to Bob Fitzgerald or to Major Harmel who, after verification, duly numbered your name and recorded the date and place of your deed. Both these men were public servants whose devotion to the cause of air safety made this voluntary effort a labor of love.

They were self-appointed to the task, as were the reporters and writers who, like myself, availed ourselves of the War Department's information and dispensed it, with certain personal embellishment, for what we thought was the public interest.

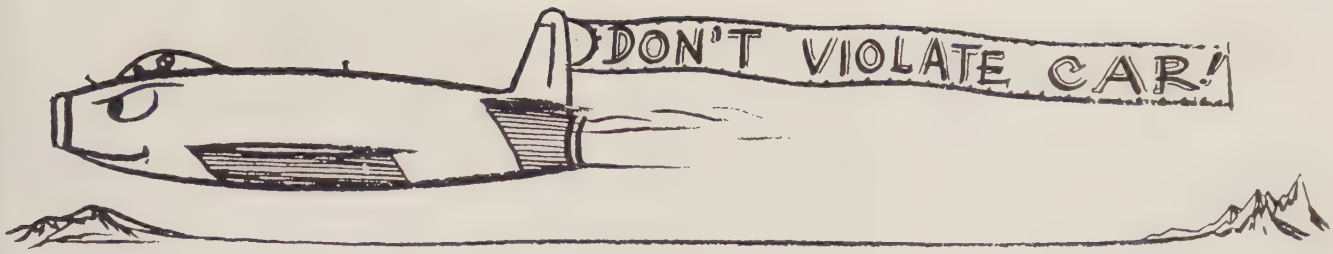
The Club definitely made a dent in the public mind after 1929. During the succeeding decade the membership increased rapidly, and thanks to devoted friends of the Caterpillar Club, the "mythical" society flourished and grew -- all "by accident."

In passing, it might be noted that neither the founders, nor the self-appointed champions and historians were members of the Caterpillar Club. They could not wear the lepidopterous insect, but they rallied to the cause symbolized by the Club.

A good deal of misunderstanding and inaccurate information exists about the founding and meaning of the Club. Until several years ago, it was a so-called "mythical" organization -- a club on paper, without a constitution, and having no officers, no meetings, not any elections; but I believe we can say that the Club

(*Continued on page 60*)

"I've always had a crazy ambition to fly..."



Dilbert

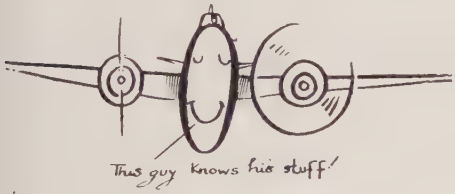
(*Continued from page 46*)

Case C. This one taxied into a gas truck while returning to the line after a flight. The truck was standing big-as-life in its accustomed place.

Case D. This pilot failed to *complete* his landing. Toward the end of the landing run, he relaxed and turned his attention to matters inside the cockpit. Imagine his foolish look of surprise when the plane took charge, went into a groundloop, and wrecked a wing.

Case E. In shifting tanks preparatory to landing, this pilot carelessly shifted his selector valve to 'off.' When his engine suddenly konked out, he hit the top of a tree on the edge of the field and landed up-side-down.

It's the same damn thing, over and over -- *carelessness and inattention*. There ought to be a law against this lackadaisical attitude. Like *liberty*, the price of aviation safety is *Vigilance*--continued and unrelenting.



SINGLE ENGINE OPERATION -- Most twin-engine airplanes will fly on one engine -- provided the pilot knows his stuff. Ah, there's the rub. Flying a twin-engine ship on one engine is a delicate maneuver requiring special technique, which can be learned only by training and practice. And it takes more of the same to keep your hand in.

No matter how good a flyer you are, if you haven't had previous experience in single-engine operation, the chances are you will bitch it up, if suddenly presented with the emergency. The following is a list of mistakes most commonly made under such circumstances:

A. Becoming panic stricken. The crisis is so sudden to the inexperienced that they just freeze up. Their minds go blank. About all they do is to try and hold the plane in the air by brute force.

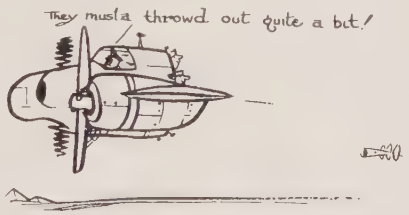
B. Failing to go immediately on single-engine operation. Don't lose valuable altitude while fiddling around in the cockpit, trying to get the dead engine started. Commence single-engine operation immediately. Then, if you have time, try to get the other engine started again.

C. Failing to feather the propeller of the bad engine. Believe it or not, in the excitement some of them compound confusion by feathering the wrong prop.

D. Failing to adjust trim. Here again, some make the wrong trim adjustments.

E. Failing to use the necessary power on the good engine to maintain flight. There are cases on record where pilots have lost the entire plane because they failed to increase power on the good engine. This is the one time when it doesn't pay to baby your engine; *if necessary*, use everything you can get out of it.

F. Failing to jettison the necessary equipment to get below maximum weight for single-engine operation. As long as you are over this weight you are bound to lose altitude, so don't wait too long to give the order. Incidentally, your flight crew must have training, too. They must know exactly how much of what to dump and how to do it most expeditiously.



The best way, in fact the only way, to become expert at single-engine operation is to practice it, but with a light load and at safe altitude. First, learn the exact procedure for your particular airplane. Then, get checked out and practice it until you become so proficient that, in an emergency, you will *automatically* take corrective action in proper sequence.

LET'S LOOK AT THE RECORD--The Civil Aeronautics Board has just released another yearly aircraft accident report. It is chock-full of potent advice for aviators; all of it backed up with statistics. You should study the entire report, but it contains two sock-dolagers which I can't take a chance on you missing.

The first shocker is the high mortality rate of collisions and spin-stall accidents. Over 80 per cent of all fatal accidents are distributed about equally in these two categories. And sad to relate, pilot error is the primary cause of practically all these accidents. If you must have an accident, be smart and pick one where the deceleration is less abrupt.

The pay-off, however, comes in the second grisly point. Violation of civil air regs is involved in almost 50 per cent of *all* fatal accidents, including those above. Brother, that's brutal punishment! Reckless flying over congested areas and visual flight under instrument conditions come next, in that order.

As I've said before, flight regulations aren't put into effect to cramp your style. They are the outgrowth of millions of flight hours and simply reflect the proved limitations of personnel and material. Wipe out these inexcusable and totally unnecessary crashes and private flying will become of age.

Planes and Plans

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of control in low-speed flight required for accurate landings in the arresting gear of a pitching ship, or for a safe "wave-off" during the last split second of the approach phase. Second, but of almost equal importance because of the extreme significance which attaches to the day-after-day availability of carrier-based aircraft, is the requirement for built-in strength and ruggedness, adequate to insure that every part shall withstand the shock of continuous carrier operation, from the screaming acceleration of the catapult launching to the violent hooked landing in the arresting gear -- and with every structural element precisely proportioned to minimize impairment of performance in the air.

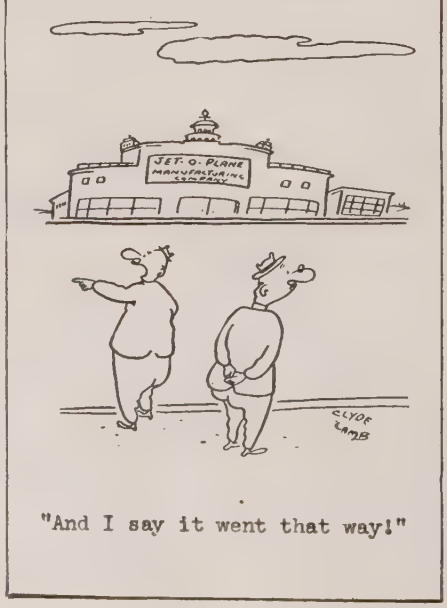
Every airplane is, of course, a matter of design compromises. Those taken by the designers of carrier aircraft in order to provide the integrated characteristics by which specially designed aircraft may capitalize upon the mobility of an air force which goes to sea, are, in general, more exacting than the compromises imposed by shore-side environments, and the Navy's research and development program gives full recognition to the importance of every possible effort to reduce the difficulties of air operations afloat. Where the shore-based aviator may be getting landing field assistance in the form of longer and thicker runways, the service afloat will be developing faster ships and more powerful catapults -- stronger decks and arresting gear of greater capacity. It is true that air operations from mobile bases present fundamental problems of considerable difficulty, but the important point is that in the hands of an aircraft industry skilled, experienced and constantly exercised in the Navy's special problems, the environmental requirements will not be crippling.

Solution of the problem of environment is, unfortunately, only the initial phase in the Navy's aeronautical research and development program, although the airplane designer may well sustain a stiff neck from looking over his shoulder at this problem, alone. The carrier task force undertakes to deliver the airplane, with fuel tanks full and with the pilot fresh and rested, to almost any quarter of the globe. Once the carrier pilot is airborne, however, he is strictly on his own and the fact that his airplane carries a hook in its tail will get him no consideration from the virile and disagreeable young men who invariably appear as our opponents in every shooting war. On the contrary, the performance of carrier-based aircraft must in every way match or surpass that of its comparable adversary.

The elements that are required to provide this technical superiority are determined by an intensive study of the aircraft flying today and those that may fly in possible future conflicts. Military intelligence, strategical and tactical considerations, and the predictable developments resulting from scientific advance all enter into a screening process in this study, and play their carefully weighed part in the evaluation. The facts and predictions, thus brought to light are resolved in the form of air-operational problems. The target of this process is the establishment of a set of requirements for an aircraft and its equipment, possible of achievement within the time specified, whose characteristics will solve the operational problem. Thus the experimental aircraft and equipment which constitute the Navy's research and development program are defined on the most realistic basis possible -- determination of the specific future needs to accomplish the mission of Naval Aviation.

Appropriate to the tactical considerations of the era, the principal categories constantly under development to meet combat-carrier requirements are fighters and attack aircraft, each with a variety of special configurations and special capabilities but with speed as the one common denominator of the basic development program. The latter shows a curious parallelism to the development of surface ships of a generation ago when the race between guns and armor was in full swing. Thicker and better armor and stronger hull structure were invariably followed by the development of more powerful guns and better fire-control systems to defeat the heavier armor. Now, by an almost Einsteinian transformation, speed replaces mass and the race in the field of aircraft development becomes one between speed on one hand, and guns or comparable armament, on the other. More speed for the jet bombers that they may escape interceptor aircraft or deliver their bombs too rapidly for ground defenses to set up effective anti-aircraft fire; more speed for fighters and interceptors that they may become effective against the high-speed bombers. Speed, to the maximum permitted by conflicting requirements of reach, may be expected to be the keynote of combat-aircraft development for an indefinite period in the future.

Contrary to the situation which existed in the interval between World War I and II, the stage is now well set for such a race. During the earlier period, the airplane designer constantly clamored for engines of greater and greater power, while aeronautical design itself advanced by a series of modest increments: NACA cowling to enclose and to reduce the drag of air-cooled engines, a shift from fabric-covered biplanes to metal monoplanes, controllable-pitch propellers, retractable landing gear, improved airfoil forms, etc



"And I say it went that way!"

In contrast to the period just cited, with the termination of World War II and the lifting of restraints which, during war days, channeled research and development activities primarily along weapon-improvement lines, the airplane designer was suddenly furnished with new sources of power sufficient to take him deep into the transonic zone or further. For once the shoe is on the other foot. Lights burn late in wind tunnels while research airplanes like Navy's Douglas 558 streak across desert skies in priority programs to collect aerodynamic data still lacking before the potentialities of new power sources can be fully exploited in terms of airplane design. An embarrassment of power plant riches faces the airplane designer. The end of the war released not just a new engine, but something more like a revolution in the power-plant design world. After some four decades of arduous development of the reciprocating engine, five new major types have now sprung into existence. The pulse jet, turbojet, turboprop, ram jet and rocket engine -- all have earned their places in Navy research and development programs, not only as subjects for future improvement in themselves but, more important, for immediate utilization as working power plants in experimental or operational aircraft.

If speed, balanced by comparable requirements for reach are regarded as the keynotes of future military development, all-weather capability, lack of which far too frequently paralyzes or impairs all other capabilities today, must be regarded as of almost equal importance. This trio of ***speed, reach,*** and ***all-weather capabilities*** demands, in turn, major improvement in every element and component of the airplane of the future. Those which relate to airplane configuration and high-speed aerodynamics and to shipboard launching and arresting equipment have already been indicated, but a host of others finds a place in our research and development program. We have attained the threshold of a new era primarily because revolutionary new power plants permit us to match our wits against the problems of the transonic zone and farther. In spite of the major advances already made, these new engines urgently require further development programs, particularly those relating to improvements in fuel consumption, in reliability and durability and in cycle efficiency. Thrust augmentation of turbojet engines to produce short bursts of high power under such critical operational circumstances as catapult launching or wave-off from a carrier landing approach are of special importance in the Navy's planning for mobile air power.

The problems of metallurgy cut broadly across a wide field of component development. Power plant ap-

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Panther

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Corps were also receiving the F7F *Tigercat*, a fast, twin-engined night fighter and fighter-bomber. The roll call merely sets the pattern of Grumman's wartime operations and extremely successful collaboration with the Navy.

Unfortunately for the still-active planes of all the world's air forces and naval air arms, the speeds possible with jet-propelled planes demonstrated during the wind-up of hostilities that reciprocating engine-powered fighters were very, very obsolete. The point was most painful to naval men because the first all-jet aircraft revealed that their long take-off runs would make it impossible for them to get away from carrier decks without catapults or jet-assist measures. The jet jobs also caused much deep thought about the clear space needed behind them on take-off to avoid the engine blast which would preclude stacking the planes along the aft portion of the deck. And if that wasn't enough to cause admirals to fidget, the jets also seemed bent on crossing them up with landing speeds judged a bit high for a tossing carrier. No problem unsurmountable, but definitely quite worrisome.

The Navy Bureau of Aeronautics battered various ideas around all during the war with production experiments leading finally to the Ryan FR-1 *Fireball*, with piston engine in the nose and turboiet in the tail, the Ryan *Dark Shark Fireball*, with a turboprop in the nose and straight jet in the tail, and McDonnell's twin-jet FD-1 *Phantom*, the first U.S. production fighter powered by axial-flow turbojets.

Inasmuch as Grumman, during the war, was the country's largest manufacturer of Navy fighters, it concentrated on producing its conventionally powered line of 'Cats, with jet experimentation going to other builders not so closely committed to Navy plans, a condition almost sure to leave Grumman hanging on the postwar limb for a while. The war ended and the Bethpage plant began putting the finishing touches to the F8F's and F7F's, carrying on with enough production to tide the Navy over the troublesome transition period. Something new was needed to effect a Grumman transition.

One of the pleasant things about the plant out on Long Island is that no one seems to worry much about his title -- they all concentrate on building aircraft. In April, 1946, eight months after the Japanese surrender, a group of men headed by Robert Hall, who might be the assistant chief engineer in charge of experimental work, and Richard Hutton, who may be called chief development engineer, finally were able to get around to working with their staffs on some possible types of jet planes that Grumman would build for the Navy.

However hazy they might be about using titles there's nothing vague either about the men or their work. Thirty-six-year-old Dick Hutton is a case in point. The 21st person employed by Grumman when he went to work for the company back in November of 1930, he became development engineer along about 1939 and has had that job on every Grumman airplane from the F4F on. As a measure of his capability he received the 1945 Lawrence Sperry Award of the Institute of the Aeronautical Sciences 'for his outstanding contributions to the development of carrier-based aircraft.'

The experimental staff started with several ideas conditioned by then-existent types. Two of the studies involved planes similar to the Ryan *Fireballs* with composite power plants, one was like the RAF's twin *Derwent*-powered Gloster *Meteor* and one was developed around the Rolls Royce *Nene*, third of the British 'River Class' jets (following the *Welland* and *Derwent*), the *Nene* being then far ahead of all other jet engines in mechanical development and performance. Small plasticene models were constructed and the various designs were worked on and compared in that flexible medium.

Then in June of 1946, with the discussions still informal, the studies and Grumman's various conclusions were submitted to the Fighter Branch of the Navy Bureau of Aeronautics where enthusiasm veered more to the *Nene*-powered design.

August saw the formal submission of the design to the Navy and the Grumman experimental staff worked on test models for the next few months while in October two engineers went to England to study the *Nene* at

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Planes and Plans

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plications require improvements in resistance to temperatures above 1600 degrees F. At the other end of the scale, aerodynamic heating of the airplane -- the problem of skin friction resulting from high-speed flight -- requires programs for the development of heat-resistant plastics and light metal alloys.

Arising from the same phenomenon of aerodynamic heating, continuing research and development is required in the field of cockpit air conditioning. Fundamentally, the latter is accomplished by cooling systems integrated with cockpit pressurizing units to provide pilot tolerable atmosphere under high-speed, high-altitude conditions. Closely related to other phases of cockpit development, is the matter of pilot escape. Two principal programs are being fostered here. The first is designed for escape under conditions below 500 mph. In this method of escape the pilot and his seat are catapulted through an upper side cockpit opening to a height above the fuselage sufficient to clear the tail of the airplane, where the pilot releases his seat and descends by means of his parachute. Although development is not complete, extensive ground and flight tests show great promise. For speeds above 500-mph a program is in progress for development of design criteria for the so-called capsule-type escape. In this scheme, the forward portion of the airplane containing the pilot is detached from the airplane and the pilot subsequently releases himself from the capsule and descends by parachute. This feature is incorporated in the Douglas 558. Because of the volume of aerodynamic problems involved in this program, the major part of the work is being conducted by NACA.

The pilot's responsibilities in flight, and his ability to cope with the increasing demands of high-speed and all-weather operations of the future, form an important part in the Navy's aeronautical research and development program. Broadly speaking, this program deals primarily with the host of vital components, which relate to automatic control and to an extension of human perception. The war-time development of an impressive list of electronic devices for automatic gun laying and bomb sighting, for communication and identification, for navigation, for vision by radar, and for automatic piloting scarcely laid the foundation for the development programs we picture as necessary in the field of comprehensive instrumentation. Far beyond the simpler aids of the past, the object of this new automatism is to supplement and, in many tasks, replace human perception, judgment, and response in the mechanics of flight by the multiplied capabilities, sensitivity and precision of electronic apparatus, in order that a highly complex flying machine may be directed by simple over-all commands -- thus permitting safe flight which, otherwise, would be beyond the capabilities of human pilots because of the distortions of the geometry of space and time created by this new regime of speed.

As is the case with most efforts to create new devices or apparatus, aeronautical projects range, to a greater or lesser extent, through three phases; through the search for new and fundamental laws which we call research; through the development period in which the products of research provide the tools for the creation of devices to serve a specific purpose or embody desired attributes; and finally through the test and evaluation phase when the competence of the device to accomplish the results desired is determined. As to the first phase, although the Bureau of Aeronautics is vitally interested in the products of research, only a small portion of its budget is identified with this phase, first because the Navy Department centers research activities in the Office of Naval Research and second, because much of the basic knowledge is aerodynamical in nature and flows from the laboratories of the National Advisory Committee for Aeronautics. Budgetwise, the major part of the funds of the Bureau of Aeronautics is expended upon projects undertaken with industry to develop and design the aircraft and aeronautical equipment required for the specialized purpose of Naval Aviation. Nor is this phase any mere matter of calling out contractual specifications. On the contrary, only a broad scale Navy partnership with science and industry which provides on one hand authoritative understanding and forecasts of the needs of the service and, on the other, full recognition of the implication of research discoveries, can capitalize on the potentialities of bold new methods for approach to advanced design objectives. Vigorous, orderly, and progressive programs towards the end product -- the best possible weapon for the purpose intended -- are essential in the development phase, but *most important of all is the momentum which comes only from continuity of effort.*

In contrast to the development phase, regarded primarily as a joint undertaking between the Navy and science and industry, the final step of *test and evaluation,* conducted at one of the great Naval laboratories or Naval Air Test Centers, is the stage where least can be delegated to the contractor and where most must be accomplished directly by the Service itself. It is here that experience sits in judgement over the proposed article of war, evaluating its competence not only to "meet the specifications" but also to solve the operational problem which has initiated its creation.

Not until it has undergone this searching scrutiny of the user's eye and has been found effective as a weapon when weighed against the countermeasures which the forward march of science invariably generates along with new and improved weapons -- only then is the new device entitled to be tagged as an interim asset of national defense -- until the new device itself is outmoded. In the meantime its successors must, in turn, be moving boldly ahead from research laboratories to the drafting board and from the development shops to the test centers. Momentum and mobility in the research and development program are the foundations of mobility in naval air power.

Panther

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Rolls Royce, Ltd. Although wind tunnel testing went on to early 1947, resulting in later changes in minor assemblies, the design engineering set-up was frozen in November, 1946, and the prototype wooden mock-up was built that month with work modifications on it proceeding to January, 1947.

The first of the new year saw the mock-up ready for Navy inspection and, during three days in January, specialists from all branches of BuAer okayed the results, the engineering department went to work on the flying prototype.

The work ended on the mock-up, according to Grumman's system, the direct connection of Hutton, the chief development engineer, was finished. The Project Engineer for the X, Gordon Israel, had come on the scene when the design was frozen back in November and, after BuAer okayed the mock-up, he came into complete charge of the design. Israel, another 36-year-old engineer, had started with Grumman in April, 1941, and had been project engineer on the F7F *Tigercat* and on the *Mallard*, Grumman's postwar amphibian executive transport.

In February, 1947, work began on the flying model and on July 26 the first of two British-built *Nenes* was shipped by Rolls Royce via American Overseas Airlines cargoplane from London.

From the time of the first plasticene model, through the paper work, wind-tunnel tests, full-scale wooden model and the all-metal finale, minor changes took place in the over-all design. Externally, the jet exhaust section was modified and the horizontal stabilizer was raised about a foot to clear it from the path of wing flow turbulence. Nothing in the external view of the plane was even slightly reminiscent of the familiar hump-backed Grumman fighter design, except for the usual square wing tips. Navy medical studies had dictated the arrangement of the cockpit from the standpoint of the physical and psychological requirements of the pilot and the final result is considered by the Navy to be the closest approach to its ideal functionalized cockpit.

In November the plane was completed and the chief engineering test pilot, 27-year-old Corwin H. 'Corky' Meyer, came into the picture. Corky had joined Grumman in November, 1942, as a production test pilot after instructing Army flying students in Boston, and since then had flown tests on every military plane type produced at Bethpage. The engine received its first ground run on November 20 and the next day Corky took the plane out for its first taxi tests. Three days later he took the plane up for its first flight.

When you ask an engineering test pilot what he thinks of the design he's testing, you get the feeling that you've committed an unpardonable *faux pas*. In any case, Corky gets the idea home that the *Panther* is really hot stuff and thus far hasn't caused him any trouble worth mentioning. Actually a jet plane takes only about 10 per cent of the trouble and concentration required to get going in a piston-engine fighter. "You hit three switches, touch a fourth and you're off," is the way Meyer puts it.

Performance figures on the F9F will not be set until Corky Meyer flies the plane down to the Navy Air Test Center at Patuxent River, Maryland, where the Navy will have about 100 test flights made before arriving at its final averages to gauge the all-around achievements of the plane. At that point the experimental and development group of over 125 men, including the project engineer, no longer have a connection with the plane and they are released for work on new designs and further projections of existing types.

Carrier-based planes present peculiar problems that seem contrived to send aeronautical engineers into blueprint-biting rages. In addition to the problem of fuel supply for range, critical in jets, the plane has to be compact enough for carrier storage which ordains folding wings; has to be able to land on a carrier at low speed and be stopped on the deck with arresting equipment and, most important, it has to be able to take off in less than 600 feet. As an additional factor, maintenance problems must not be complicated and service has to be simple. That all makes for quite a bit of mechanical complication for one small aerial machine.

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Navy Air

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it. However, in its fulfillment, it is our duty to reflect the desires of the people of the United States.

The people must therefore know the facts. They must not only understand and know the reason for our foreign policy, but they must know what kind and how much force is necessary to uphold it, and how much that force will cost. An informed America will readily pay the premiums for peace insurance.

Air power is our most convincing weapon, but it is as costly as it is potent. Consequently, we must build air power with one eye on strength and the other on economy. It would be suicide to build any kind of military power at the expense of national bankruptcy. A balance must be struck between the air power we want and the air power we can afford. We must be sure to get the greatest possible amount of "might" for every tax dollar we spend. But we must also remember the possible cost of inadequate defense in terms of American loss of lives, substance, and liberty. I believe Congress is poignantly aware of its responsibility in this matter.

Consciousness of the particular duty resulted in the National Security Act of 1947. It placed all branches of the military service under one Secretary of Defense in order to attain greater efficiency and economy. The act also set up legal insurance for American air power by the establishment of an autonomous Air Force and by a guarantee of the existence of a naval aviation. It provided for two complementary kinds of indispensible air power.

Neither the Navy alone, the Air Force alone, nor the Army alone is capable of supplying the needed military strength of the United States. If Congress believed one of them could, it would have taken steps to eliminate the other two in the interest of economy. That this was not done testifies eloquently to congressional opinion concerning the need for all three branches. My opinion is in accord with that of Congress on this point.

When SKYWAYS asked that I prepare this article for the special naval air issue, I saw in it an opportunity to report on the need for American armed force generally and the specific value of one of the essential members of our fighting team.

The new Navy, forged in the fires of World War II, is an *air* Navy. Its capital ship is now the carrier and its chief weapon the airplane. It operates aircraft of various types, among them fighters, attack bombers, and patrol craft. Of the 25,000 operating military aircraft which this country owns, 11,000 are Navy's.

The unique capabilities of naval aviation, used in conjunction with the essential capacities of the Air Force, make a tremendous contribution to American defense.

Naval aviation is largely carrier based. Because of this, it has a certain power unique unto itself which might be described as "prevention-is-better-than-cure" power. When trouble brews anywhere in the world, the Navy carrier can move within range of it a ready-made air base, and aircraft ready for action at a moment's notice. The effect is similar to that created when a burly policemen arrives at the scene of a streetfight which, prior to his coming, had all the symptoms of turning into a "free-for-all."

The U.S. aircraft carrier is, therefore, more than just a weapon. Throughout the world it is also a symbol of our insistence on international law and order.

When trouble subsides and the carrier's presence is no longer needed, it moves on, leaving behind no costly equipment or immovable installations. The economy and peace-preserving value of such an ingenious instrument is apparent.

Its utility is especially striking when we realize that 70.8 percent of the earth's surface is water and that today the United States Navy controls it all. There are very few land areas out of reach of the Navy's carrier-based planes, and no other nation possesses a comparable force.

This specialized utility of the carrier as a peace-preserving diplomatic weapon is sharpened by the fact that its presence on the oceans of the world in no way violates International Law. The Navy needs no passports or visas. No previous diplomatic negotiation and no previous conquest are needed before it can appear within range of a trouble-maker's shores. It needs to fire no guns and drop no bombs to make its convincing presence felt. The special qualities it possesses have caused it to be called a "precision instrument" of American foreign policy.

In spite of the fact that our carriers are bases, no nation can object to their existence. It is absurd to imagine any foreign power sending the United States a diplomatic note demanding the immediate cessation of the building, or the conversion, or the equipping of our aircraft carriers.

In order for American air power to be usable in case of another war we will need bases. In spite of the millions of printed and spoken words on the subject of push-button warfare and aircraft of infinite *range*, *America still does not have them.* In spite of the sensational but wishful words on the subject, *range* continues to be the black beast which haunts our designers and builders of military planes.

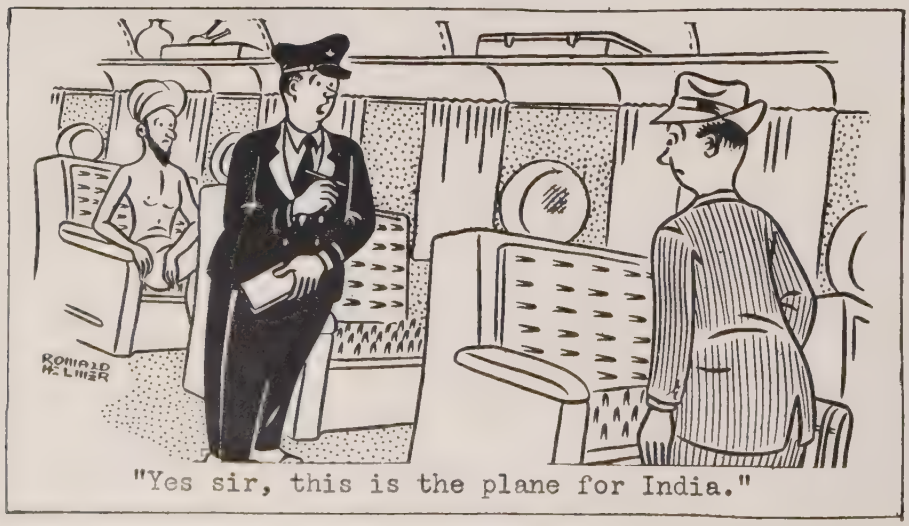
The military aircraft can be divided into several stages: the operations stage, the production stage, the test stage, the experimental stage, the design stage, and the prediction stage. Their immediate military usefulness falls in that same order. The return-trip bombing flights from continental United States to possible far-away enemy targets are still in the prediction stage.

Thorough studies by the President's Air Policy Commission and the Congressional Aviation Policy Board have found that the United States *does not* and for years to come *will not* have aircraft capable of carrying bomb loads to possible distant targets on round-trip flights from the continental United States. There is no evidence that such flights may be made in the future with planes of any design now envisaged. We do have the best planes with the longest range the scientific minds of our aeronautical engineers have to date been able to devise. But these planes still do not reach far enough, and our best informed airmen do not venture a guess as to how many years it will take before we will be able to discount advance bases from our military needs.

Within four or five years other nations are expected to be producing atomic bombs. At that time, any advance bases or occupation zones we might be holding with the usual skeleton forces might be atomized into complete unavailability on the first day of the war. It would be most unrealistic to reject that possibility. Any large expenditures to set up fixed bases in territory which could not be made available to us in war must, therefore, be carefully weighed.

United States carrier-based aircraft would have to establish their superiority over an enemy's land-based planes. Amphibious operations and foot soldiers would follow. Constant aerial superiority would be kept while landing strips were being built by Engineers and Seabees. Then our Air Force's strategic bombers could begin delivering their knock-out blows at the enemy's vital interior. This is the sort of thing I had in mind when I mentioned the two complementary kinds of air power set up in the National Security Act of 1947.

Until someone can take the weight out of lead and make possible atomically powered aircraft, that one tremendous problem of "reach" will cause this nation to continue depending on teamwork for its defense ✦✦✦



"Yes sir, this is the plane for India."

Panther

(Continued from page 55)

The *Panther* incorporates features already used on other jets and has several unique points of its own. The most important of the latter is the already described 'droop snoot' which works in conjunction with flaps to give short take-off and slow landing characteristics. Fuselage speed reduction brakes are added for additional control in flight. For sensitive maneuverability the aileron controls are assisted by hydraulic power boost of a conventional type.

The nose section is capable of incorporating various armament packages and gives access to the electrical and hydraulic equipment nerve centers. For ease of maintenance the entire nose forward of the cockpit is unlocked with one lever and then slides forward like a drawer in a filing cabinet. As with other jet planes developed with the nose free of air intakes, the F9F may be equipped with radar apparatus without the need for a bulging wing radome.

The cockpit, much roomier than that in previous piston-engine carrier planes, is pressurized for operations above 40,000 feet, with full temperature control, and is enclosed by a full-bubble, free-blown plastic canopy. The windshield is glass with plastic side pieces. To overcome the possibility of friction heat distortion of the canopy, the inner surfaces are cooled by the refrigeration system which provides complete pilot comfort at high-speed and high-altitude flight. Production models also will include the Navy's version of the pilot ejection seat, the frame of which is stress for 40g's.

The power section, behind the cockpit, is reached through the tail section, which separates from the plane at the trailing edges of the wings and can be detached in less than three minutes. The dominant reason for Corky Meyer's statement that the jet is a simple plane to start is contained in the integrated electrical system used for this purpose. An electric panel involving sequence relays performs all starting operations automatically after the pilot hits his switches.

The Pratt & Whitney version of the Rolls Royce *Nene* will incorporate American screw threads and a modified accessory drive section to mount U.S. accessories. It is being manufactured of materials available in domestic supply, but will have the same power ratings and will follow the British design. British-production *Nenes* are rated at a minimum of 5,000 pounds static thrust at sea level, with an output of 4,450 pounds at 600 mph at 12,300 rpm.

The *Nene* is a pure jet with a single-stage double-entry centrifugal compressor and nine straight-flow combustion chambers. Burning gases drive a single-stage axial-flow turbine and then eject past the exhaust cone through the tail pipe. The engine is 96.8 inches long over-all to the exhaust cone flage, with a maximum diameter of 49.5 inches, and with engine accessories weighs about 1,600 pounds.

The *Nene* runs on standard kerosene or gasoline and at present stages is the most efficient and powerful production jet engine in use. Under the licensing agreement with Pratt & Whitney, all Rolls' *Nene* developments are available for the American-built version.

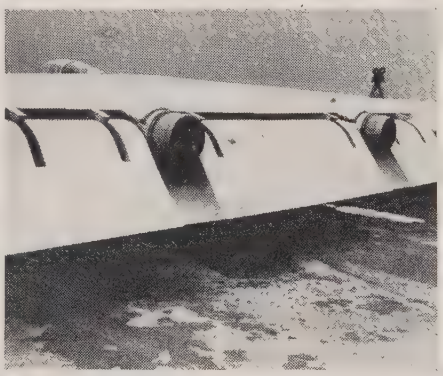
The *Panther* power-plant installation has two spring-loaded doors in the fuselage above the engine air intake which provide an auxiliary source of air for the engine until the plane reaches a speed of 150 mph and gets enough ram air through the wing intakes for effective performance. Jet-propelled aircraft of the *Panther* class must be able to handle internally approximately 4 tons of air per minute and the internal duct aerodynamics seriously affect a plane's fuel consumption, range and performance.

The Allison 400 turbojet, the alternate engine for the F9F, is a redesigned model of General Electric's I-40 which Allison took over more than two years ago and has since put through extensive development. The model for the *Panther* is designated the J33-A-8 and is the same type engine installed in the Air Force's P-80R when it set an interim speed record last year at 623.8 mph. Size and type make it similar to the *Nene* and late progress has brought its rated power up to almost the same output level. Whether Grumman uses the Allison or Pratt & Whitney jet in the *Panther*, it insures that the plane will receive the benefit of engine advances made by two widely separated companies without the need for extensive re-design to accommodate them.

On the basis of the performance and potentialities of that slick jet that Corky Meyer has been rolling through the skies over Bethpage, Grumman should be providing 'Cat's eyes for the fleet for a long time to come.

Starboard view of tailless AW-52 shows its air intakes beside pilot's cockpit. Jet ejectors are seen behind back-swept wings

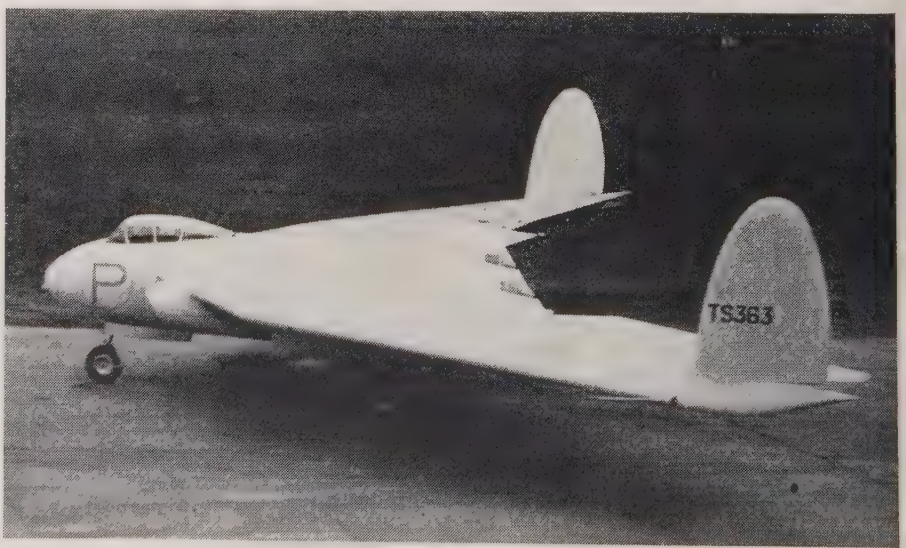
Britain's Jet Wing

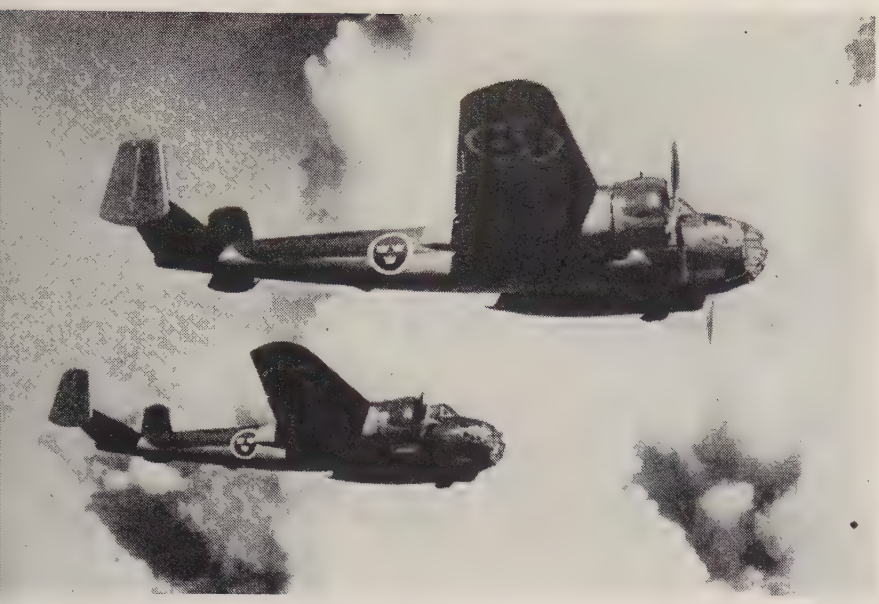


This close-up photo of AW-52 shows its jet exhausts and power operated dive-recovery flaps

The UK's first tailles aircraft is this Armstrong Whitworth AW-52 that is fitted with two Rolls Royce *Nene* jet engines. Although the "flying wing's" top speed is still a secret, reports indicate it is in vicinity of 500 mph. Cruising at 36,000 feet at 330 mph, the AW-52 has an estimated range of 1,500 miles. It has an all-up weight of 33,000 pounds and a rate of climb given as 4,800 feet per minute. It has been developed as research ship.

So-called unconventional appearance of the plane is designed to eliminate the drag of the conventional body-and-tail ships





Sweden's three-place medium bomber is this SAAB 18A. It is powered by Swedish built P & W engines, has top speed of 289 mph

Swedish Air Force

Although Sweden is one nation of the world that has not been involved in a war in many generations, the country today is losing no time in building up the strength of its Air Force. The military aircraft that are presently a part of Sweden's Air Arm are the J-22's, J-26's (P-51), SK-12's, DO-24's, HE-114's and HE-115's, several DH jets (with many more on order) and the series SAAB 17, SAAB 18, SAAB 21 and 21R, as shown here.

Sweden's jet fighter is the SAAB 21R powered by Goblin 11 jet engine giving it 500-mph speed

In the dive-bomber class, this SAAB 17A is standard operational equipment. It is two-place plane, has top speed of 270 mph

Caterpillar

(Continued from page 50)

had a charter or ideal, expressed both in the words and the intentions of the founders.

It was conceived along humanitarian, not political or commercial lines. The founders intended that the Club should symbolize human heroism and inspire confidence in aviation. Every Caterpillar is a living reminder that safety measures pay off.

The first Caterpillars realized that they were blazing new trails with an invention on trial; the airman's life-saver was at the core of a struggle between those who defended its usefulness and those who contended it had no place in aviation outside of an aerial circus.

Those who remember the experimental pains and bitter disputes which raged about the parachute also recall that its life-saving role in modern aviation was painstakingly worked out and demonstrated by members of the McCook Field Parachute Unit under Major E.L. Hoffman. The free-type chute was their answer to the cry for an end to the growing list of air fatalities.

Aviation may be the vanguard of progress, but air safety holds the key. And the cause of air safety concerns a great many people of diversified interests.

All these interests are wrapped in each other and interlaced. Air safety affects the public interest first, especially the flying public. If parachutes were standard equipment on airliners, we would have both grandmothers and infants as members of the Caterpillar Club. Anybody who flies is a potential member.

Besides the public, the Caterpillars themselves have a stake in air safety. Collectively, they hold the largest body of information relating to the art and technique of aerial escape. After the first emergency jump, a Caterpillar is better prepared for the next one. The lessons learned from Caterpillar experience form the best textbook for indoctrinating others with the logic of air safety.

Despite the keen rivalry which exists between companies in the parachute industry, they, too, have a stake After all, saving lives is the big aim of this business. Although infinitesimal compared to the aviation industry itself, the future of the chute industry is not bounded by the limited uses which confined it to the past. The design and construction of parachutes involved far more than meets the eye; and day by day the industry acquires new skills which result in greater dependability for life-savers.

For a number of years the big chute companies helped to enliven the Caterpillar Club with an *esprit de corps*. They kept certain jump records on file; they sent letters of encouragement and congratulation to Caterpillar candidates, and they awarded the Caterpillar insignia. In other words, they helped to preserve the organization during its "mythical" days. One or two companies sought to acquire commercial exploitation rights to the Club, and one company even claimed to have started the Club, but the claim failed to stick. Today the Caterpillars are too numerous and too far-flung for any one company to embrace, and that is all to the general good.

On the credit side, the companies have certainly contributed improvements to life-saving equipment, and they have the further responsibility of carrying on a research program that ultimately will afford parachute protection to anybody who flies.

Shortly after the free-type chute was developed, there was a strange notion that little could be done to improve it. That view was unfortunate, because as early as 1935 the Nazis under Hitler began to discover undreamed-of possibilities in the parachute idea.

The war caught our armed forced flat-footed in 1939, and further investigation will, I believe, bear out that we paid a stiff price for that neglect. The Germans had learned to apply chutes in novel ways: they used them as tail-brakes on high-speed planes; they attached chutes to catapult seats, enabling pilots to escape jet-fighters, they attached chutes with timing devices to bombs, torpedoes, and air-cargo; moreover, the Germans carried ribbon-chutes to a fairly-advanced development.

After adding the German experience and know-how to our own, what have we? A mere beginning. Parachutes are still immature, and no one can foresee their ultimate role in the service of humanity. Motivated by engineering and medical research

and the cumulative experience of Caterpillars, the textile fall-breaker is a symbol of hope for safety in flight.

Today no one questions the wisdom of the Military regulation which makes the wearing of parachutes obligatory. But many experts doubt the usefulness of parachutes on commercial airliners. Some day this controversy will resolve itself, and I venture to say that it will favor the parachute.

The present man-chute works well up to a point -- but airplanes have already flown past that point. We might as well admit it -- beyond 350 mph air-safety is a will-of-the-wisp. The poor parachute is running this race under forced draft, desperately trying to catch up with jets and turbojets.

It took a second World War to get our military leaders vitally interested in parachute progress. Right now, of course, the parachute is enjoying a special respect in the Army and Navy. Well, what else can they depend on?

No matter how high, how far, how fast he flies -- the parachute remains the military pilot's best friend.

Since the airlines do not share the Army's and the Navy's enthusiasm for man-chutes, we find a wide breach in the program for air-safety. In the course of events, that hiatus may be bridged by one or a combination of developments: spurred by military necessity, the Army-Navy research team may bring forth some first-class improvements to the man-chute, or they might even contrive a dependable plane-chute.

One day -- perhaps sooner than expected -- a load of passengers will board an airliner to find parachutes as traveling companions. The $64 question is: What will the passengers do? Run out? Relax in peace? Or ..... ?

The fickle public may fool us all by accepting parachutes as nonchalantly as they accept lifeboats and lifeboat drills on steamships. There is some basis for saying that the popular dread of parachutes has been over-dramatized. Even veteran flyers do not embrace the parachute joyfully, until faced with a choice between life or death.

Caterpillars can perform a valuable service by helping to quell doubts in the public mind. I recall that not so many years ago there was a serious discussion as to whether you retained full possession of mind and senses while falling through space. The Caterpillars dispelled that along with other illusions.

Now that the Caterpillars have emerged from their mythical cocoon and become a full-fledged organization, they have the power to aid a good cause -- the salvation of life.

The way is open for Caterpillars, numbering from 40,000 to 50,000 in lands around the globe, to ennoble the tradition which gave the Club its fame; or to surround the organization with a halo of exclusion from things mundane.

A club of brave men commands admiration; but society places its heaviest burdens on the brave. We have had thousands of lucky accidents, and from this wealth of experience Caterpillars can help to reduce the mortality of flying and thereby earn all human gratitude. ++

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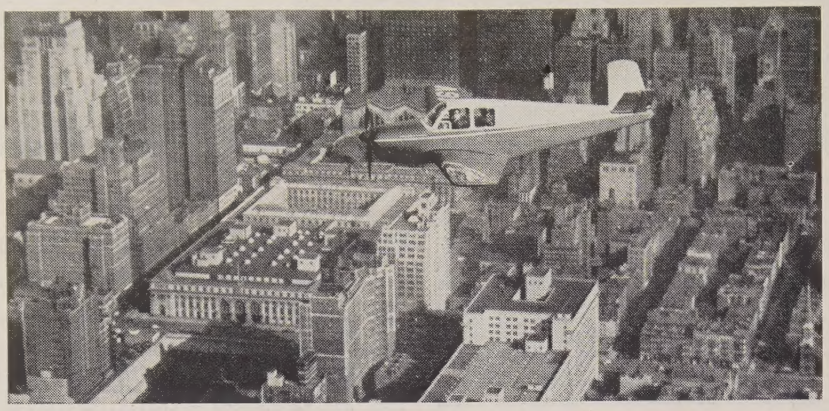

Former King Mihai is at controls of Bonanza over N.Y.

King Mihai Flies Bonanza

One of the first things former King Michael of Rumania did after coming to the U.S. was to try his hand at flying a Bonanza. With him on flight were Stewart E. Poole, Neil Fulton and Sydney Nesbitt, all of Atlantic Aviation Corp.

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Page 8--USAF; 16--Goodyear, Beech; 18,19,20,21--H.L. Brennert CBS; 22, 23--USAF, Press Assoc.; 24, 25--Don Downie; 26, 27--Socony Vacuum; 28, 29, 30--US Navy, Martin & Kelman, Harold Martin, Ross Pix; 31--US Navy; 32, 33--US Navy; 34, 35, 36--US Navy, BuAer; 37--US Navy, United Aircraft; 38, 39--US Navy, Martin Aircraft, North American; 40, 41--US Navy, Douglas; 42, 43--US Navy; 44, 45--US Navy, Marine Corps; 49--Acme, Beech.

Constable

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flew him to the Tri-City Airport near the Courthouse where he was met by a Sheriff's car and rushed to the court room -- in time for the trial. The drive from Twentynine Palms to San Bernardino takes from two to two-and-a-half hours but the distance can be flown by *Cub* in 45 minutes.

When a party of fishermen, at Lake Havasu on the Colorado River, failed to return when expected, worried families notified the Constable. He climbed into his ship and flew over the narrow dirt road leading out the back of the valley to the fishing resort. After landing at the Havasu flight strip he found that the fishermen had stayed an extra day, but were then on their way home. On this flight he sighted a lightplane forced down, apparently out of gas, on a desert road. He notified the Havasu Airport and reported where the plane was to be found. On the return flight, Cones saw the grounded plane being refueled.

In the rugged country of the California desert, paved roads and telephone lines have not yet reached many areas, and the lightplane is a great boon to law enforcement agencies.

Flying Hunter

When Army officials were investigating a reported air crash, one complete group was stranded in a deep canyon during a mid-summer heat of over 130 degrees in the shade. With his slow-flying *Cub*, the Constable was able to drop cans of fruit juice without damage while cans dropped from faster, high-flying aircraft burst when they hit the ground. On any search flights, Mr. Cones carries a gallon thermos of water, flares, a first-aid kit and cans of fruit juice, all of which he can drop from his plane.

To complete his utilization of the ship, Mr. Cones has even spotted abandoned stolen cars from the air. The Constable has flown 140 hours in the past two years, with a large part of that total flown entirely for business.

One weekend recently a road contractor left a large pile of oiled sand beside a partially completed street. When he returned the following Monday morning, at least five truck loads of the valuable "black top" were missing. The contractor reported the theft to the Constable, so Jack Cones took off in his *Cub* for a little scouting. He was so familiar with the area that he quickly spotted a brand new driveway...and the owner frantically shoveling sand over it in a vain effort to conceal the road. The contractor sent the land owner a bill for five truck loads of oiled sand and the matter was dropped.

The Constable permits his air-minded friends to use the *Cub* when he is not flying for business. Pasted to the instrument panel is this reminder, however: "Let it be understood by those who fly this plane that it is not necessary for me to rent it to make the payments. It is only made available to you so that you will be able to enjoy flying as I do." They do.